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PRC

FILE COPY

March 31, 1993

Ms. Vicky Tapang
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Mail Stop HW-105
Seattle, Washington 98101

Subject: Interim Final RFA Report
Port of Seattle/Burlington Environment, Inc. Pier 91 Facility
Work Assignment R10077
Contract 068-W9-0009
Technical Enforcement Support, Zone 4

Dear Ms. Tapang:

PRC Environmental Management, Inc., (PRC) is pleased to submit five copies of the interim final report for the Terminal 91 Resource Conservation and Recovery Act facility assessment (RFA). At the request of the EPA work assignment manager, this report has been titled an interim final, although it is the final RFA report PRC will produce for this site under this contract. Also, the corrective action stabilization questionnaire has been removed from the final RFA report and is submitted separately at this time, per the EPA work assignment manager's request. The trip report (Appendix D) presents information recorded in the logbook during the visual site inspection; therefore, photocopies of the logbook have not been included in the report.

If you have any questions please contact me at 624-2692.

Sincerely,

Noushin Arab
Project Manager

Enclosure

cc: Dave Croxton, EPA Work Assignment Manager

CORRECTIVE ACTION STABILIZATION QUESTIONNAIRE

PORT OF SEATTLE/
BURLINGTON ENVIRONMENTAL, INC.
PIER 91 FACILITY
SEATTLE, WASHINGTON

INTERIM FINAL RESOURCE CONSERVATION AND RECOVERY ACT FACILITY ASSESSMENT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment No.	:	R10077
EPA Region	:	10
Date Prepared	:	March 31, 1993
Contract No.	:	068-W9-0009
Site ID No.	:	WAD 00081 2917
Prepared by	:	PRC Environmental Management, Inc.
Project Manager	:	Noushin Arab
Telephone No.	:	206/624-2692
EPA Work Assignment Manager	:	Dave Croxton
Telephone No.	:	206/553-8582

Signature: _____ Date: _____

___ This report requires revision based on comments provided by EPA.

___ This report is approved as the final RFA report.

Note: Upon receipt of this RFA report cover sheet signed by the EPA work assignment manager, the contractor shall forward a copy to the EPA regional project officer and respective RFA tracking contract in the RCRA Permit Section (Dawnee Dahm) and the RCRA Compliance Section (Cheryl Williams).

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ACRONYMS AND ABBREVIATIONS

AOC	Areas of Concern
API	American Petroleum Institute
BEI	Burlington Environmental, Inc.
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CHEMPRO	Chemical Processors, Inc.
CITY ICE	City Ice and Cold Storage Company
DAS	Distribution Auto Services
ECOLOGY	Washington Department of Ecology
EPA	U.S. Environmental Protection Agency
PANOCO	Pacific Northern Oil Company
PCB	Polychlorinated Biphenyls
PRC	PRC Environmental Management, Inc.
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SVOC	Semi-Volatile Organic Chemicals
SWMU	Solid Waste Management Unit
TPH	Total Petroleum Hydrocarbon
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VSI	Visual Site Inspection

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) prepared this Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) to support U.S. Environmental Protection Agency (EPA) enforcement of RCRA. PRC was asked to conduct this RFA at Terminal 91 in Seattle, Washington, to complement the draft RFA (Tetra Tech 1988) prepared only for the Chemical Processors, Inc. (Chempro) facility in 1988. Chempro became Burlington Environmental, Inc. (BEI) in 1991. The RFA is necessary because BEI applied for a RCRA permit. The corrective action requirements for an RFA specify that EPA assess all contiguous property under the same ownership. Since the Port of Seattle owns the Terminal 91 property and leases portions of the terminal to a variety of businesses, including BEI, an RFA is required for all of Terminal 91, not just the BEI portion of the property. EPA requested that PRC conduct an RFA for the portions of Terminal 91 not assessed during the 1988 RFA process and only update the earlier Tetra Tech, Inc. (1988) RFA information into a new RFA report. This report presents PRC's preliminary file review and site investigation findings. No recommendations have been included in this report regarding the need for further investigation at SWMUs and AOCs at the request of the EPA work assignment manager. The 1988 RFA is included as Appendix A of this report.

An RFA represents a first step in the process for implementing the corrective action provisions of the 1984 Hazardous and Solid Waste Amendments to RCRA. Specifically, RCRA sections 3004(u), 3004(v), and 3008(h) grant EPA the authority to require corrective action for releases of hazardous waste and hazardous constituents from solid waste management units (SWMU) at RCRA-regulated facilities.

An RFA usually consists of three steps: a preliminary review, a visual site inspection (VSI), and if needed, a sampling visit. The purpose of these steps is to:

- Identify and gather information on releases of hazardous wastes and constituents at the RCRA facility
- Identify SWMUs and areas of concern (AOC) at the facility and evaluate them for releases of hazardous wastes
- Screen from further investigation those SWMUs that do not pose a threat to human health or the environment

1.1 PRELIMINARY REVIEW

The preliminary review was conducted in accordance with procedures outlined in the EPA (1986) RFA guidance document.

Files were reviewed at the offices of EPA Region 10, Seattle, Washington, and the Washington Department of Ecology (Ecology), Bellevue, Washington. Information was also obtained from the Port of Seattle in response to a request from EPA. Because a draft RFA had already been completed on the BEI facility, PRC did not review files pertaining to that facility. At the request of the EPA work assignment manager, PRC incorporated information on the BEI site from the following documents into this report:

- *Draft Report RCRA Facility Assessment, Chemical Processors, Inc., Pier 91, Seattle, Washington* (Tetra Tech 1988)
- *Chemical Processors, Inc., Pier 91 Facility, Solid Waste Management Unit Report (Chempro 1988)*
- BEI response to EPA SWMU information request (BEI 1992)

1.2 VISUAL SITE INSPECTION

During the October 20 and 21, 1992, VSI, all areas of interest specified in the preliminary review report were examined. A trip report is included as Appendix F to this report.

The following individuals participated in the visual site inspection:

Dave Croxton, EPA Region 10
Noushin Arab, PRC
Gwen Herron, PRC
Galen Tritt, Ecology, Northwest Regional Office
John Stiller, BEI
Ron Atwood, BEI
Nathan Mathews, BEI
Mike Brandeberry, BEI (first day only)
Julie Sloquin, BEI
Doug Hotchkiss, Port of Seattle
Don Newlin, Port of Seattle (first day only)
Sue Roth, Kennedy/Jenks Consultants
George Markwood, Pacific Northern Oil Company (first day only)
Marylis Palumbo, BEI (first day only)

2.0 FACILITY DESCRIPTION

This section describes the location, past and present operations and hazardous waste management practices, and regulatory history of Terminal 91.

2.1 LOCATION

The Port of Seattle's Terminal 91 property is approximately 120 acres and includes Piers 90 and 91. Terminal 91 is located at the north end of Elliott Bay at 2001 West Garfield, west of 15th Avenue in the Interbay area between the Queen Anne and Magnolia neighborhoods in Seattle, Washington. The general site location is shown on Figure 1.

2.2 SITE HISTORY

Port of Seattle leases portions of Terminal 91 to BEI, Pacific Northern Oil Company (PANOCO), City Ice and Cold Storage Company (City Ice), and Distribution Auto Services (DAS). BEI leases approximately 4 acres from the Port of Seattle, on which it operates a hazardous waste storage and waste oil treatment facility (identification number WAD 00081 2917). This facility was granted interim status in 1980 and received a state-authorized RCRA permit in July 1992, which became effective in August 1992. BEI's operations consist of transporting, storing, and treating solid and hazardous waste from off-site generators. Hazardous waste is not disposed of at this facility. The BEI facility had been leased and operated under the name of Chempro from 1971 until the fall of 1991, when the facility name was changed to BEI.

Information regarding past practices and releases to the environment as a result of BEI, PANOCO, City Ice, and DAS operations is summarized in sections 2.2.1 though 2.2.4 of this report. Section 2.2.5 provides information on areas at Terminal 91 not specifically identified at these facilities.

2.2.1 Burlington Environmental, Inc. Facility

The 4-acre facility was originally owned and operated by Texaco, Inc. in the 1920s. Texaco transferred ownership to the U.S. Navy during World War II, and the Port of Seattle operated the facility. The U.S. Navy later transferred ownership to the Port of Seattle (Croxton 1992).

In 1971, the Port of Seattle leased the 4-acre site to BEI. In turn, BEI subleases approximately 60 percent of its Terminal 91 complex to PANOCO for use as a marine fuel depot. All of the oil treated and recovered by BEI is currently sold to PANOCO (Tetra Tech 1988).

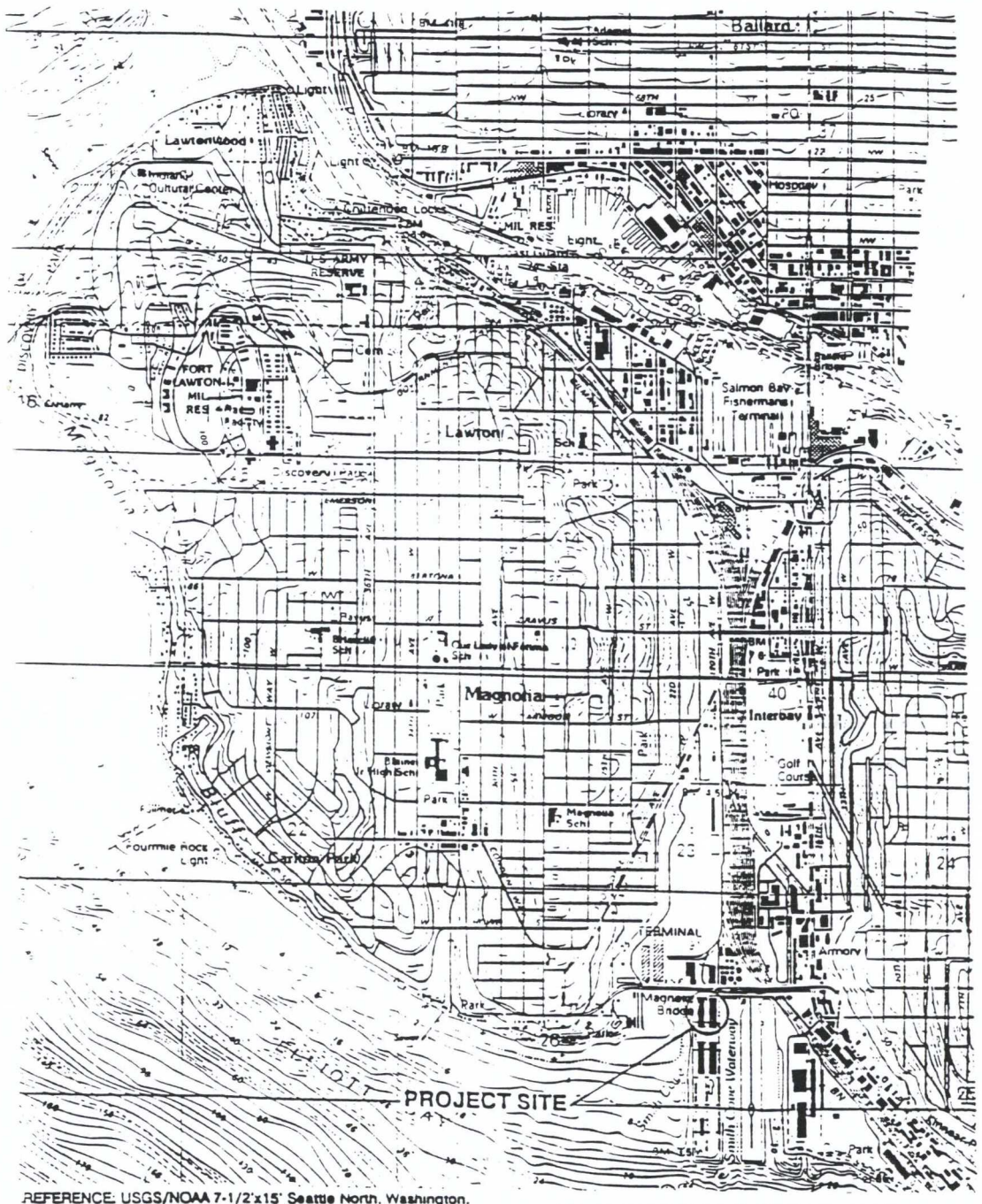


FIGURE 1

GENERAL SITE LOCATION
TERMINAL 91 FACILITY

Source: Converse 1990a

PRC Environmental Management, Inc.

Wastes treated by BEI since 1971 include (Tetra Tech 1988):

- Dirty, oily bilge water
- Pretreated oily wastes from other BEI facilities
- Oily industrial wastewater
- Spent industrial coolants (phenolic and nonphenolic)
- Waste machine oil from local automotive shops

BEI generates hazardous waste sludges from thermal, chemical, and physical treatment of waste oil and oily wastewater. The sludges may contain significant concentrations of extraction procedure toxicity constituents (e.g., lead and chromium) and volatile organic compounds associated with petroleum products (Tetra Tech 1988). The waste sludge is transferred to the Lucille Street BEI facility in Seattle for final management (Tetra Tech 1988).

The 1988 RFA identifies one RCRA-regulated unit and 16 SWMUs at the BEI Terminal 91 facility (Appendix A). The SWMUs are listed in Section 4.0 of this report. During the VSI, additional SWMUs were identified and are also discussed in Section 4.0. Information on BEI SWMUs identified since the original RFA (Tetra Tech 1988) has been primarily gathered from two reports submitted by BEI in 1988 and in 1992. The 1988 BEI report lists units closed before and during BEI operations.

Units that may have been SWMUs before 1971 when BEI (then Chempro) acquired the site are listed below and are discussed further as AOCs in Section 5.0.

- Building 17
- Tanks 340 and 341
- Tank 1530
- Tanks 119 through 126
- Tanks 7 and 8
- Oil barrel drain pit
- Oil barrel tumbler pit

SWMUs closed during the BEI operation are (Chempro 1988):

- Tank 118
- Wastewater treatment tanks (two)
- Coolant treatment tank
- Treated wastewater tank

Tank 118 and the coolant treatment tank are identified in the 1988 draft BEI RFA; wastewater treatment tanks and treated wastewater tanks are discussed in Section 4.0. No information was found in the files to document releases from these SWMUs before June 1971, when BEI operations began (Chempro 1988).

Known releases to the environment before and during BEI operations until July 5, 1988 are discussed in Section 5.0. Undocumented possible releases to the environment before and during BEI operations are also discussed in Section 5.0.

Also located on the BEI site near tanks 112, 114, and 115 is Building 127. Building 127 is discussed further in Section 4.0.

2.2.2 Pacific Northern Oil Company Facility

BEI subleases approximately 60 percent of the Terminal 91 treatment and storage complex to PANOCO for use as a marine fuel depot. Tanks 91 through 93, 95, 97, 99, 101 through 104, and 113 are operated by PANOCO. These tanks are used to store product oil (Markwood 1992). Because air releases from these product tanks do not contain gaseous material, they are not regulated as solid wastes and are therefore not considered to be SWMUs.

Petroleum product has been released from PANOCO equipment on several occasions. On August 26, 1990, PANOCO discovered a rupture in a bunker C transfer line near the center of Pier 91 (Figure 2). This fuel line was replaced, and approximately 80 cubic yards of contaminated soil were excavated. A small amount of contaminated soil below the valve box (about 1.5 cubic yards) could not be removed because of the potential for structural damage to the valve box and transfer

line (Converse 1990a). The contaminated soil was transported to an asphalt plant in Tacoma, Washington. Grab samples collected from the excavation side walls and bottom indicated the presence of total petroleum hydrocarbon (TPH) concentrations below the Ecology cleanup standards of 200 ppm (Converse 1990a).

On May 14, 1991, PANOCO personnel discovered another rupture in a bunker C transfer line near the south end of Terminal 91 (Figure 2). PANOCO estimated a release of approximately 30 to 60 gallons to the underlying soil (Converse 1991). The fuel line was replaced, and approximately 40 to 50 cubic yards of petroleum-contaminated soil were removed (Ecology 1991). Confirmation soil samples were collected from the excavated area. No TPHs were present in the analyzed samples (Converse 1991). These spills are not listed as SWMUs or AOCs in this report since cleanup was conducted and since the confirmation samples did not indicate the presence of contaminants at levels above the cleanup standards.

2.2.3 City Ice and Cold Storage Company

City Ice also leases portions of the Terminal 91 property. Most of the buildings leased by City Ice are used to process and store frozen seafood, either by City Ice or by companies who sublease space from City Ice. Buildings M-28, W-39, W-390, B-391, B-392, and W-40 are used by City Ice or their fish processing subleasors (Figure 3). City Ice subleases space in buildings M-28, B-392, and W-40 to Arctic Alaska and Independent Packers for frozen fish processing and cold storage. Warehouse W-47 is also leased by City Ice to various occupants. The northern half of the warehouse is used by City Ice largely for the storage of fish meal. In this half of the warehouse, a locked, partitioned room was observed during the VSI. This room was unlocked and inspected on December 4, 1992. This building is discussed in Section 4.0.

The southern half of warehouse W-47 is subleased by Pacific Rim Consultants, a steel fabrication company. During the VSI, Pacific Rim Consultants employees were seen welding steel. Along the outside wall of this facility, metal containers of red oxide primer were observed. A Pacific Rim Consultants employee stated that this facility no longer primed steel at this location after the fire department ordered this facility to stop using primers because of the associated fire hazard. However, freshly primed steel beams were clearly visible behind a paint curtain at this facility (Croxton 1992). During the December 4, 1992 site visit to Terminal 91, the Pacific Rim Consultants were no longer in operation at this location. Building W-47 is scheduled to be demolished in 1993.

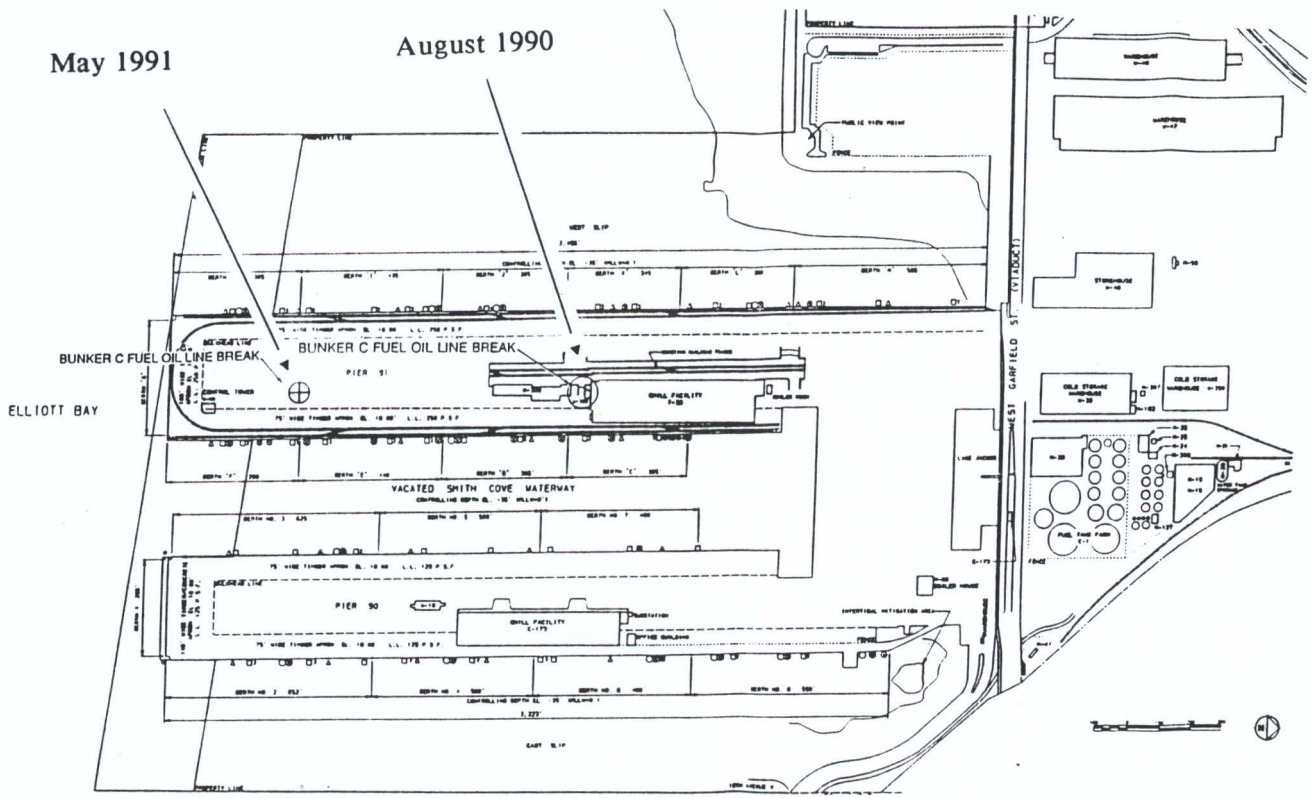


FIGURE 2

BUNKER C OIL LINE BREAK
PANOCO TERMINAL 91 FACILITY

Source: Adapted from Converse 1990a and Converse 1991

PRC Environmental Management, Inc.

Expansion of the City Ice warehouse and fish processing facility near Building W-39 required a geotechnical investigation of the site. Samples collected on June 23, 1987, from one of the monitoring wells installed at the proposed expansion area indicated 900 ppm of hydrocarbon vapors (Geo Engineers 1987). Water samples collected on August 19, 1987, indicated the presence of petroleum hydrocarbons, diesel fuel, benzene, and ortho-xylene (Geo Engineers 1987) (Section 5). No cleanup activities were conducted at this location (Hotchkiss 1992a). Port of Seattle records indicate that a citation was issued to City Ice for a minor ammonia release and reported oil spill on July 24, 1987 (Port of Seattle 1987b). The facility uses ammonia receivers as part of the refrigeration systems in the frozen food storage warehouses. The ammonia release is not listed as a SWMU or an AOC since it was a one-time spill that was discharged to Elliott Bay and immediately diluted.

2.2.4 Distribution Auto Services

Property leased by DAS is used primarily to process and store imported automobiles. DAS uses the short fill area (Section 4.4.4) located next to Lake Jacobs (shown as the short fill lagoon on Figure 3) to park cars and trucks once they are unloaded from ships. The short fill area is located between Piers 90 and 91 at the head of the slip, and was created by filling the area with moderately contaminated dredge material behind clean structural fill berms, under approximately 16 feet of clean structural fill cap. Groundwater has been monitored over the past 6 years at this location (Port of Seattle 1992).

DAS also leases property at the north end of Terminal 91 to wash, apply protective coatings, repair, paint, and install additional items in vehicles. Outside, west of Building W-158 on the paved lot, is an automobile spray system that consists of an inverted U-shaped pipe through which water is pumped. Water from the spray station flows in a stream along the asphalt to the storm drain. Building W-158 is the car wash station. In one half of Building W-158, DAS employees remove expired aquacoating from vehicles with detergent. Aquacoating is a protective coating that must be removed and reapplied every 90 days. In the second half of Building W-158, new aquacoating is applied (Section 4.4.1).

Automobile accessories such as alarms and compact disc players are installed in Building C-154. Minor vehicle maintenance, largely oil changes, also takes place in this building. Building C-155 houses two paint booths (Section 4.4.3).

Also on the DAS-leased area are a number of underground storage tanks (UST) (T-91-A through T-91-G) as shown on Figure 3. These tanks are discussed in Section 5.0.

2.2.5 Miscellaneous Site Information

Building W-48 is leased from the Port of Seattle by several organizations. The northern half of the building is used entirely by Commercial Crating, Inc., a wooden crate construction company. Much of the interior of this area was not inspected because access was denied by the operator. A flammable storage area was noted outside the building, however, and is discussed in Section 4.3.2. The southern end of the warehouse is used as a miscellaneous storage area for organizations that range from Seafair to Wald Imports. No storage of waste was observed, although the Seafair area contained roughly 30 clean and empty drums. Building W-48 is scheduled to be demolished in 1993 (Hotchkiss 1992a).

A number of transformers were seen during the VSI. Some of the transformers were tested for polychlorinated biphenyl (PCB) content (Hotchkiss 1992a); however, analytical results of these tests were not available at the time of completion of this report. These transformers may or may not contain PCBs. Transformers were seen outside buildings C-155 and W-47 and are further discussed in Section 4.0.

Several USTs are located on the Terminal 91 site and are shown on Figure 3 as "fuel tanks" numbered T-91A through T91O. These USTs are discussed in Section 5.0.

2.3 REGULATORY HISTORY

Although the Port of Seattle owns Terminal 91, separate and distinct operators run portions of the facility. The Port of Seattle received hazardous waste identification number WAD 98098 2706 for generating wastes such as PCB transformers, fluids, rinsates, as well as miscellaneous rags and cleaning material that are disposed of off site (Port of Seattle 1986). BEI originally notified EPA of its hazardous waste activities in August 1980 and received an identification number (WAD 00081 2917). BEI submitted a RCRA Part A application for interim status in 1980. The Part A was revised a number of times, most recently in November 1991. In November 1988, BEI submitted a RCRA Part B permit application and received a state-authorized permit in July 1992, effective August 26, 1992. PANOCO (WAD 98176 0762) operates only as a generator of ignitable waste. City Ice does not have an EPA identification number, nor do any of its subleasors. DAS has filed notice as a hazardous waste generator and received an identification number (WAD

98066 5004). The Puget Sound Air Pollution Control Agency air monitoring inspections at the BEI Terminal 91 facility focused on emissions from PANOCO's boiler.

PSAPCA inspection records do not specify any emissions originating from BEI processes (Tetra Tech 1988). However, PSAPCA has issued over 10 violations to the BEI Terminal 91 facility since 1976. All of these violations have been the result of PANOCO's boiler stack emissions (Tetra Tech 1988).

The BEI facility has been required to investigate for the presence of environmental contamination in accordance with two EPA orders. A RCRA Section 3013 order was issued June 30, 1988, to determine whether a release occurred from the facility to the environment. After the results of this study confirmed releases, a RCRA Section 3008(h) order was issued on May 7, 1990 to provide for the performance of a RCRA facility investigation (RFI). The BEI facility has also been subject to RCRA inspections of their operating facility on a regular basis.

3.0 ENVIRONMENTAL SETTING

Terminal 91 is located in a predominantly commercial and industrial area. The nearest residence is within one-fourth mile of the site. The nearest recreational area is about one-fourth mile. Magnolia School is approximately one-half mile northwest of the site (Figure 1). Access to Terminal 91 is controlled by fences and security guards.

3.1 METEOROLOGY

The climate in Seattle, Washington, is predominantly controlled by marine influences, characterized by cool, dry summers and mild, wet winter. The average daily temperatures range from 35°F in January to near 70°F in July and August. Annual precipitation is approximately 35 inches. Late autumn and winter are the wettest seasons (Tetra Tech 1988). The predominant winds are from the south-southwest.

3.2 GEOLOGY AND HYDROGEOLOGY

The 1988 draft RFA report for Terminal 91 (Tetra Tech 1988) describes the site geology and hydrogeology as follows.

The Terminal 91 industrial complex is underlain by anthropogenic deposits of unsorted and unstratified material. This material consists of clay, silt, sand, and gravel originating from dredgings from Elliott Bay and regrading activities in King County, Washington. The majority of the pier construction occurred in the early 1900s. The man-made fill material ranges from 0 to approximately 60 feet in thickness and is underlain by quaternary tidal flat deposits of clay, silt, and sand.

The hydrogeology of the Terminal 91 area is poorly understood. The fill material is generally poorly sorted. Because of the man-made deposition, well defined stratification of the material into laterally continuous layers is unlikely. The well logs from the nearby monitoring wells indicate a significant amount of sand and gravel overlying the quaternary tidal deposits. The coarse nature of the material probably produces a relatively high permeability. The fill material most likely behaves as a tidally influenced, unconfined aquifer. Further hydrogeologic tests would be necessary to fully characterize the Terminal 91 vicinity.

The preliminary groundwater information collected by BEI suggests that the groundwater flow is to the south-southwest towards Elliott Bay.

An RFI conducted by BEI provided more detailed information since the 1988 draft RFA regarding hydrogeologic conditions at the BEI facility. Some of the findings from the RFI (BEI 1992b) are summarized below.

1) Subsurface soils appear to be man-placed fill overlying in-situ and reworked glacial deposits. These subsurface soils consist of silt, silty sand, and gravelly sand.

2) Three hydrostratigraphic units, corresponding to three geologic units, have been delineated beneath the facility.

a) The water table aquifer, which is approximately 20 feet thick, has a horizontal flow to the southwest with a hydraulic conductivity of 10-4 to 10-2 centimeter per second (cm/s). This unit appears to consist of fill with discontinuous layering of silt and coarse sand.

b) The middle unit, believed to be an aquitard, consists of silty sand. The silty sand extends from about 20 feet below the ground surface to a depth of 30 to 45 feet. A pump test to investigate the properties of this unit will be completed under the RFI, but had not been completed as of this writing.

c) The deepest unit has a roughly south-southeast flow with a hydraulic conductivity on the order of 10-2 (cm/s). the degree of tidal influence on this unit is being investigated under a tidal monitoring study being conducted in March 1993.

The RFI at BEI has found widespread contamination of the soil and groundwater resulting from the industrial operations at this facility. BTEX (benzene, toluene, ethylbenzene, and xylene), chlorinated hydrocarbons, and polynuclear aromatic hydrocarbons have been detected in almost every soil boring on site [Figure 4]. Some of these constituents are also present in the groundwater. BTEX compounds were detected in all of the borings installed in both the shallow and deep aquifers.

The full extent of contamination is still being investigated under an approved RFI work plan. BEI has identified eight potential source areas for evaluation in this work plan (Figure 5).

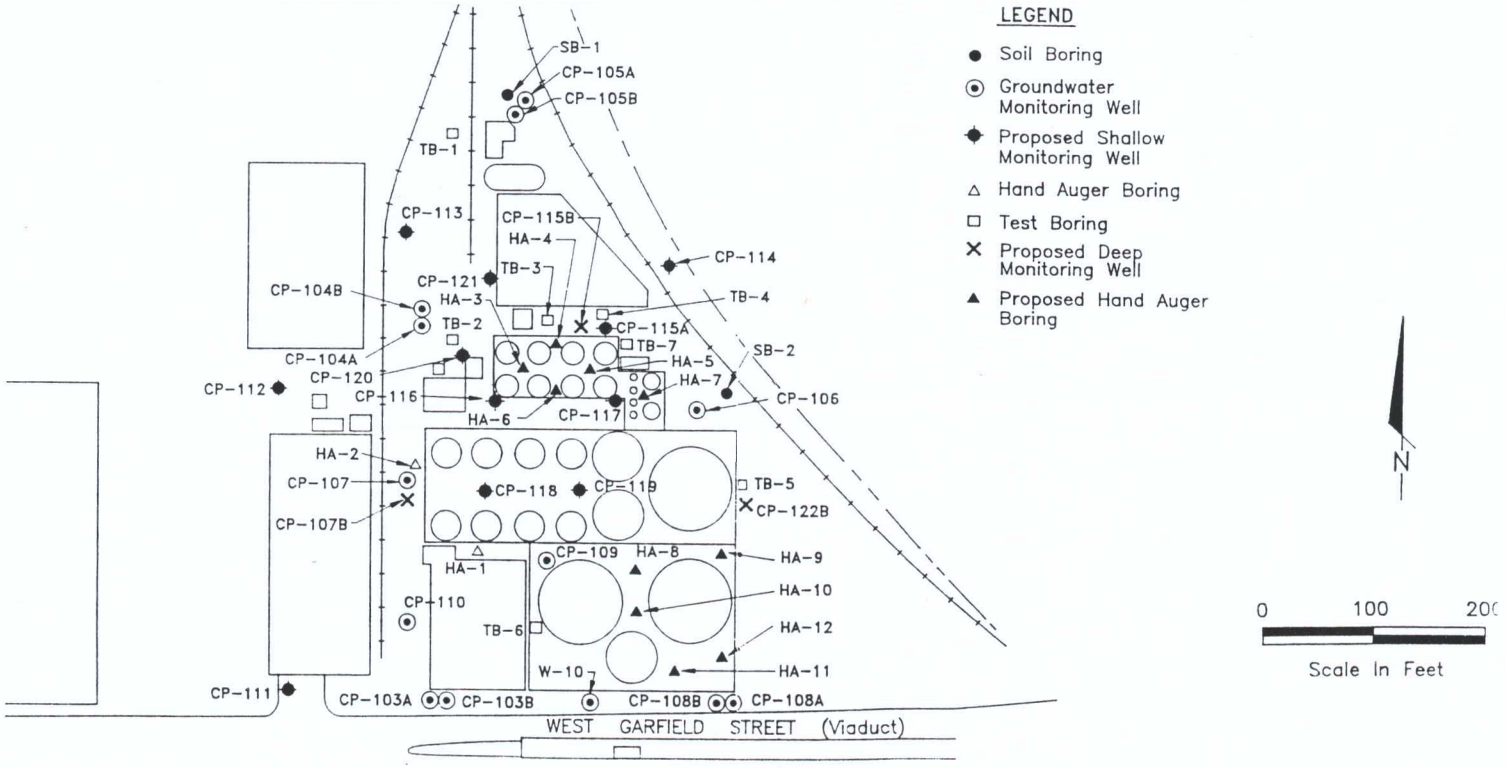
During the VSI, the inspection team observed the remains of an aborted drilling attempt at well 122A. Drilling was halted when a wide hole (approximately 6 feet by 6 feet) under the paved lot was discovered. Current theory regarding the creation of the void space is that an underground water leak eroded the soil under the pavement. This well is currently being installed.

3.3 SURFACE WATER

There are no permanent streams or rivers in the immediate vicinity of Terminal 91, which is adjacent to Elliott Bay (Tetra Tech 1988). Lake Jacobs is located 400 feet to the north of Elliott Bay. Surface water at the BEI site is not used as drinking water, and it does not drain off site to local surface waters (Tetra Tech 1988). On-site storm water at BEI facility is collected in tanks, visually inspected, and treated if necessary before it is discharged to Elliott Bay (PRC 1992). Storm waters from other areas of Terminal 91 are directly discharged to Elliott Bay.

3.4 RECEPTORS

Releases of hazardous constituents from the activities at Terminal 91 could affect on-site employees, aquatic biota, and, to a much lesser extent, terrestrial biota. On-site employees could be exposed to contaminants through direct dermal contact with hazardous constituents and through inhalation of hazardous vapors. Nearby residents are potential receptors to air emissions from the site. Access to the site is controlled by security guards and fences.

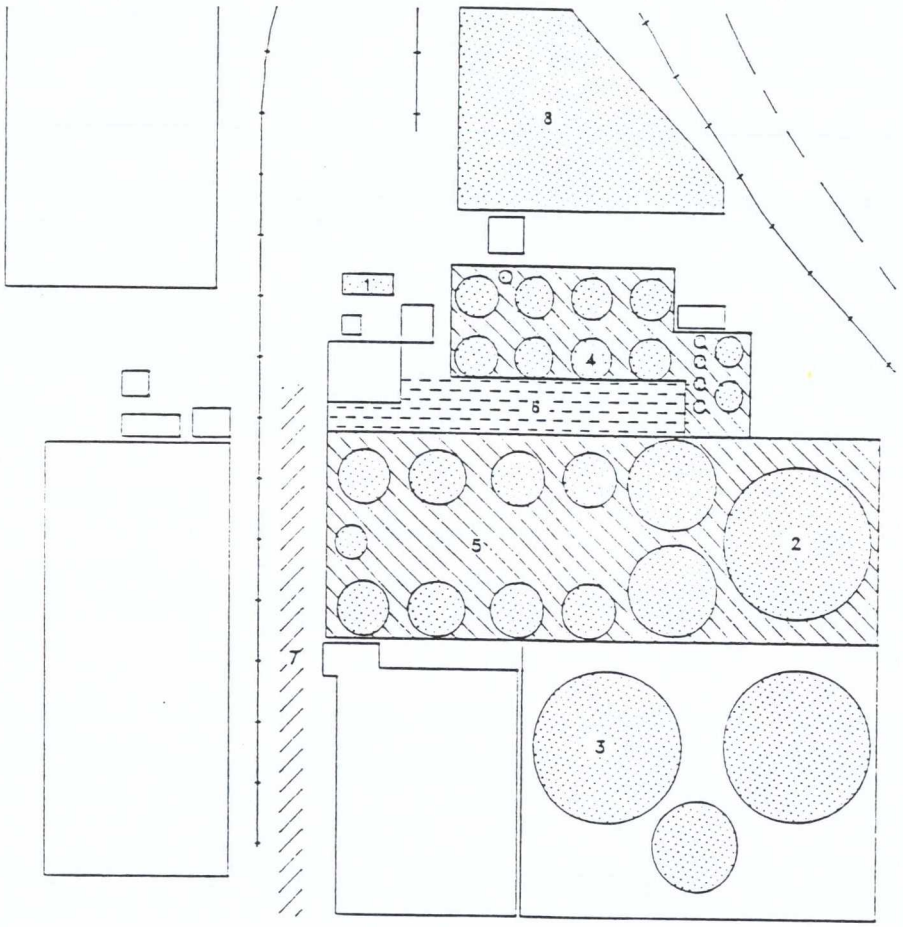


Source: Burlington 1992b

FIGURE 4

MONITORING WELL LOCATION MAP
BEI TERMINAL 91 FACILITY

PRC **Environmental Management, Inc.**



SOURCE

1. Oil–Water Separator
2. Diesel Yard Tanks
3. Big Yard Tanks
4. Small Yard Tanks
5. Waste Oil Spill Area
6. Pipe Alley Drainage
7. Piping System
8. Warehouse

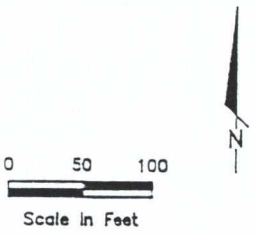


FIGURE 5

SOURCES IN PATHWAY ANALYSIS
BEI TERMINAL 91 FACILITY

Source: Burlington 1992b

PRC Environmental Management, Inc.

Contaminated groundwater is not used for drinking water; however, contaminants discharged to Elliott Bay would impact aquatic flora and fauna.

Surface water is not used as drinking water, but Elliott Bay is used for recreation (e.g., boating, fishing, and scuba diving). Aquatic fauna would be exposed to any contaminants present through ambient contact with surface water, ingestion of contaminated plants or prey, and respiration through the gills. Aquatic plants would be exposed through ambient contact and uptake of contaminated sediments and water. Terrestrial fauna may be exposed through ingestion of contaminated surface water. Water fowl exist on Lake Jacobs throughout the year and could be exposed to contaminants at this location.

Soil exposure routes for terrestrial biota include dermal contact and ingestion of contaminated soil or prey for animals, and uptake through the root system and absorption through the leaves for plants. While these scenarios are possible, ecological impacts in industrial areas are difficult to ascertain and are probably limited. The primary receptors of concern at this facility are on-site workers.

4.0 SOLID WASTE MANAGEMENT UNITS

SWMUs operated by BEI, PANOCO, City Ice, and DAS are discussed in sections 4.1, 4.2, 4.3, and 4.4, respectively. Section 4.5 identifies SWMUs at Terminal 91 not specifically operated by these entities. All of these SWMUs are located on the Port of Seattle Terminal 91 property. Forty-five SWMUs have been identified at Terminal 91. Photos taken during the VSI are included as Appendix B to this report.

4.1 SOLID WASTE MANAGEMENT UNITS AT BEI

The 1988 draft RFA for BEI included as Appendix A (Tetra Tech 1988) lists one RCRA-regulated unit and 16 SWMUs (Figure 6). This section describes the SWMUs identified during the 1992 VSI and the preliminary review process for BEI. Previously identified SWMUs are discussed in Section 4.1.1. SWMUs identified during the VSI are discussed in Sections 4.1.2 through 4.1.10.

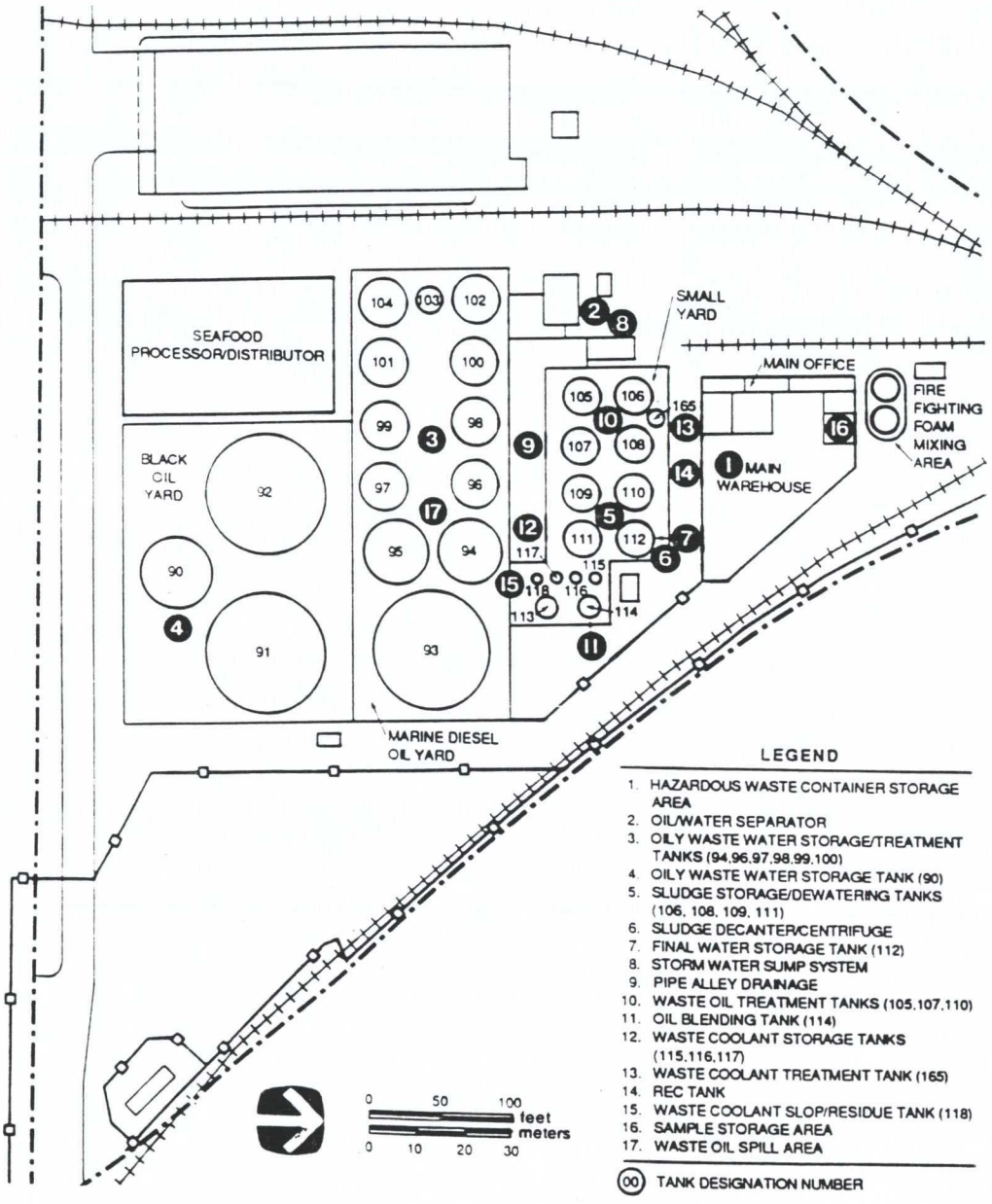


FIGURE 6

MAP OF RCRA-REGULATED UNITS AND SWMUs
BEI TERMINAL 91 FACILITY

Source: Tetra Tech 1988

PRC Environmental Management, Inc.

4.1.1 Previously Identified SWMUs at BEI

The RCRA-regulated unit (SWMU 1), the hazardous waste container storage area, is now operating under a state-issued RCRA permit.

The 16 SWMUs are as follows:

SWMU 2 - Oil/water separator
SWMU 3 - Oily wastewater storage/treatment area
SWMU 4 - Oily wastewater storage/treatment tank 90
SWMU 5 - Sludge dewatering/storage tanks
SWMU 6 - Sludge decanter/centrifuge
SWMU 7 - Final water storage tank
SWMU 8 - Storm water sump system
SWMU 9 - Pipe alley drainage
SWMU 10 - Waste oil treatment tanks
SWMU 11 - Oil blending tank
SWMU 12 - Waste coolant storage tanks
SWMU 13 - Waste coolant treatment tank
SWMU 14 - Receiving tank (former coolant tank)
SWMU 15 - Waste coolant slop/residue tank
SWMU 16 - Sample storage area
SWMU 17 - Waste oil spill area

Appendix A includes the description, waste characteristics, migration pathways, evidence of release, and exposure potential information for each unit (Tetra Tech 1988). Updated information obtained from BEI since the draft RFA report for SWMUs 2, 5, 12,13, 15, and 17 are included below. All other information on these SWMUS from the 1988 draft RFA is available in Appendix A.

Three SWMUs were closed at the BEI facility after July 5, 1988: (1) SWMU 2: an oil/water separator used for incoming oily wastewaters and oils for transfer to the storage and treatment tanks, (2) tank 108 of SWMU 5: used for storage of dewatered sludge, and (3) SWMU 12: waste coolant treatment tanks in the eastern portion of the small yard (BEI 1992a).

SWMU 2, the oil/water separator, was in operation from 1926 until 1990 (BEI 1992a). This 41,450-gallon unit was used to separate oily wastewater and oil (exempt for reuse or recycling), and consisted of a concrete vault that was removed from service, decontaminated, covered, and secured in February 1992. No information on known releases from this unit to the environment was available (BEI 1992a). Soil investigation during the RFI at BEI indicated that the highest

concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) compounds were detected near the oil/water separator (BEI 1992b).

The 1988 Tetra Tech, Inc. RFA indicates that tank 108 (of SWMU 5) was used for sludge dewatering and storage. However, this tank has reportedly been out of service possibly since 1988 or 1989, when it was emptied and decontaminated (BEI 1992a).

SWMU 12, the waste coolant treatment tanks, were originally identified in the 1988 Tetra Tech, Inc. RFA as tanks 115, 116, and 117, which were reportedly active at that time. These tanks are now reportedly out of service, possibly since 1988 or 1989, when the tanks were emptied and decontaminated (BEI 1992a).

SWMU 13 includes tank 165. The 1988 Tetra Tech, Inc. RFA described this tank as an active 11,844-gallon active tank. However, this tank was also reportedly a 4,500-gallon tank used for treatment of coolants, decontaminated, certified, and scrapped in 1988 (Chempro 1988) (BEI 1992a).

SWMU 15, tank 118, was also reportedly active in the 1988 RFA. This tank, however, was also reportedly used from 1926 until July 1986, when it was decontaminated, certified, and scrapped (Chempro 1988) (BEI 1992a).

An estimated 420,000 gallons of bunker fuel from Tank 91 was released on November 15, 1978 onto the unpaved ground in the marine diesel oil yard of the BEI facility (SWMU 17). Fuel was released when a valve was left open during fuel transfer to two other tanks. Approximately one third of the spilled fuel was recovered in 1979. To recover the remaining oil, BEI dug holes in the area, let spilled oil seep in, and pumped it out. Soil was rototilled in mid-1979, then drain tile and crushed rock were added to the yards. Cleanup was reportedly complete by late 1979 or early 1980. The tank system yard was fully paved in 1986 (Chempro 1988). The presence of contamination in downgradient wells suggest that contaminants from the yard have entered the aquifer (Tetra Tech 1988).

Tanks currently operated by BEI include numbers 90, 94, 96, 98, 100, 105 through 107, 109 through 112, 114, (Figure 6) and 164 located between Tanks 108 and 110. During 1988 and 1989, all BEI tanks were emptied, decontaminated, and inspected for possible certification for RCRA use. Residuals and debris from emptying and decontamination were managed as Ecology-

designated dangerous waste (WT02) (BEI 1992a). These tanks are used to hold a variety of wastes from waste oil, oily water, emulsified oil, boiler condensate, return water, and asphalteen (BEI 1992a). All of these tanks except tank 164 are described in the 1988 Tetra Tech, Inc. RFA (Appendix A). Tanks 105, 107, 109 through 112, and 164 are certified for RCRA service.

Nine additional SWMUs have been identified at the BEI facility since the draft BEI RFA report (Tetra Tech 1988). These SWMUs are described below.

4.1.2 SWMU 18 - TANK 164

This steel tank has been used for storage and treatment of dangerous waste and is certified for RCRA service (BEI 1992a). This tank is identified in the state RCRA permit as Tank 3013. This tank is currently used by BEI for treatment of aqueous wastes such as oily water, wastewater, and machine coolants. This elevated 14,000-gallon conical bottom tank (photograph 1) is located in the small yard between tanks 108 and 110 (Figure 6). Tank 164 was installed in 1988. This single-wall tank is inspected daily for leaks, as well as annually for corrosion. The residual oil after treatment is processed at the BEI Georgetown facility in Seattle, Washington. The treated water is discharged to The Municipality of Metropolitan Seattle sewer system after being tested for pH, metals, fats, oil, and grease content (Mathews 1992).

Wastes Managed

Wastes managed at this location include oily water, residual oil, wastewater, and machine coolants. These wastes may contain metals, methyl ethyl ketone, 1,1,1-trichloroethane, methylene chloride, and other volatile organic compounds (VOC) and semivolatile organic compounds (SVOC).

Release Controls and History of Release

This tank is sealed and is located within secondary containment (a concrete wall around the tank). The tank is inspected daily for any leaks and annually for corrosion (Matthews 1992). There is no documentation or visual evidence of releases from this SWMU during the VSI. This tank has a vapor recovery system to capture releases of VOCs and other vapors and return them to the tank. The tank appears to be in good condition.

Release Potential and Rationale

The potential for release from this tank is low. The tank is within a secondary containment wall, appears to be in good condition, and is inspected daily.

4.1.3 SWMU 19 - SEWER LINES

During sewer reconnection in 1987, at the northeast portion of the BEI facility (shown as Chempro on Figure 3) near the old barrel cleaning station, volatile petroleum hydrocarbon odor was noted (Port of Seattle 1992). BEI representatives collected and analyzed soil samples at this location (photograph 2). BTEX contamination was found (Port of Seattle 1992). This area is identified as number 3.2 on Figure 3. The potential sources of this release were considered to be gasoline storage tanker fuel transfer lines (Hotchkiss 1992a). This area is now paved and outside the retaining wall of the RCRA-regulated storage and treatment area.

Wastes Managed

The source of the high levels of BTEX in the soil is thought to be a release from a gasoline storage tanker fuel transfer line.

Release Controls and History of Releases

This area is covered with asphalt, and the contaminated soil remains in place. No cleanup activities were conducted. Releases have already occurred to the soil in this area.

Release Potential and Rationale

Since contaminants have already been released into the soil, the potential for contaminant releases from this SWMU to groundwater is high. The area is paved however, making the potential for contaminant release to air and surface water low. Groundwater is being investigated under the RFI now in progress at the BEI facility.

4.1.4 SWMU 20 - AMERICAN PETROLEUM INSTITUTE GRAVITY SEPARATOR

The American Petroleum Institute (API) separator is sealed and is located on the east portion of the BEI premises (photograph 3). This oil/water separator was installed in 1979 and abandoned in 1980. The API separator is a tank constructed of steel and is placed above a concrete pad with no secondary containment. During the VSI, a small oily area was noted on the ground below the drainage pipe. The API separator has been empty since at least 1986 (Matthews 1992).

Wastes Managed

The API separator was used to treat oily wastewater. No analytical results of these wastes are available.

Release Controls and History of Releases

The API separator is a tank constructed of steel, placed on concrete. There is no secondary containment. The separator is not sealed. A small oily area was noted on the ground below the drainage pipe. No other staining was noted.

Release Potential and Rationale

The likelihood of contaminant release to soil and groundwater is low since the area is paved. Contaminants could wash off and migrate to surface water during a storm. Even though the separator has not been in use since 1980, the potential for contaminant release to air and surface water is moderate because of evidence of release.

4.1.5 SWMU 21 - ABANDONED OIL/WATER SEPARATOR

An abandoned oil/water separator, presumably operated by BEI (Port of Seattle 1992), was located at the south end of Pier 91 (photograph 4). The removal date of this unit is unknown, but it appears that this unit has not been used for several years. The oil/water separator was an underground unit. The area is currently paved with concrete. Limited information is available for this unit.

Wastes Managed

Oily wastewater was treated in the oil/water separator. No analytical results on wastes managed at this unit are available. These wastes may have contained metals, VOCs, and SVOCs.

Release Controls and History of Releases

No information on release control devices for this unit is available. There is no documented information on releases from this unit.

Release Potential and Rational

The potential for release of contaminated waste oil to soil and groundwater is moderate for this area. The likelihood of contaminant release to air and surface water is low since the unit is underground.

4.1.6 SWMU 22 - WASTEWATER TREATMENT TANKS

Two steel wastewater treatment tanks (6,000 and 8,000 gallons) were in operation by BEI from 1979 to 1982. These aboveground tanks were used to treat emulsified wastewater and wastewater with low levels of chromium and phenolic compounds received from tanker trucks. These tanks

were removed from the site and were sent to an approved off-site disposal facility. The location of this SWMU is shown on Figure 7 (Chempro 1988).

Wastes Managed

Wastes managed in these tanks include emulsified wastewater and wastewater contaminated with low levels of chromium and phenolic compounds (Chempro 1988).

Release Controls and History of Release

There is no information on release controls or history of releases for these tanks.

Release Potential and Rationale

The potential for release to soil in the area is unknown because neither the condition of this SWMU nor the existence of release controls is known.

4.1.7 SWMU 23 - TREATED WASTEWATER TANK

This 4,800-gallon steel tank was used by BEI to store treated wastewater requiring clarification. This tank was in operation from 1984 to 1988, when it was decontaminated, certified, and scrapped (Chempro 1988). Figure 7 shows the location of this SWMU.

Wastes Managed

The primary waste managed at this SWMU was wastewater requiring clarification. No analytical data on this waste are available, but it may have contained metals and phenolic compounds.

Release Controls and History of Release

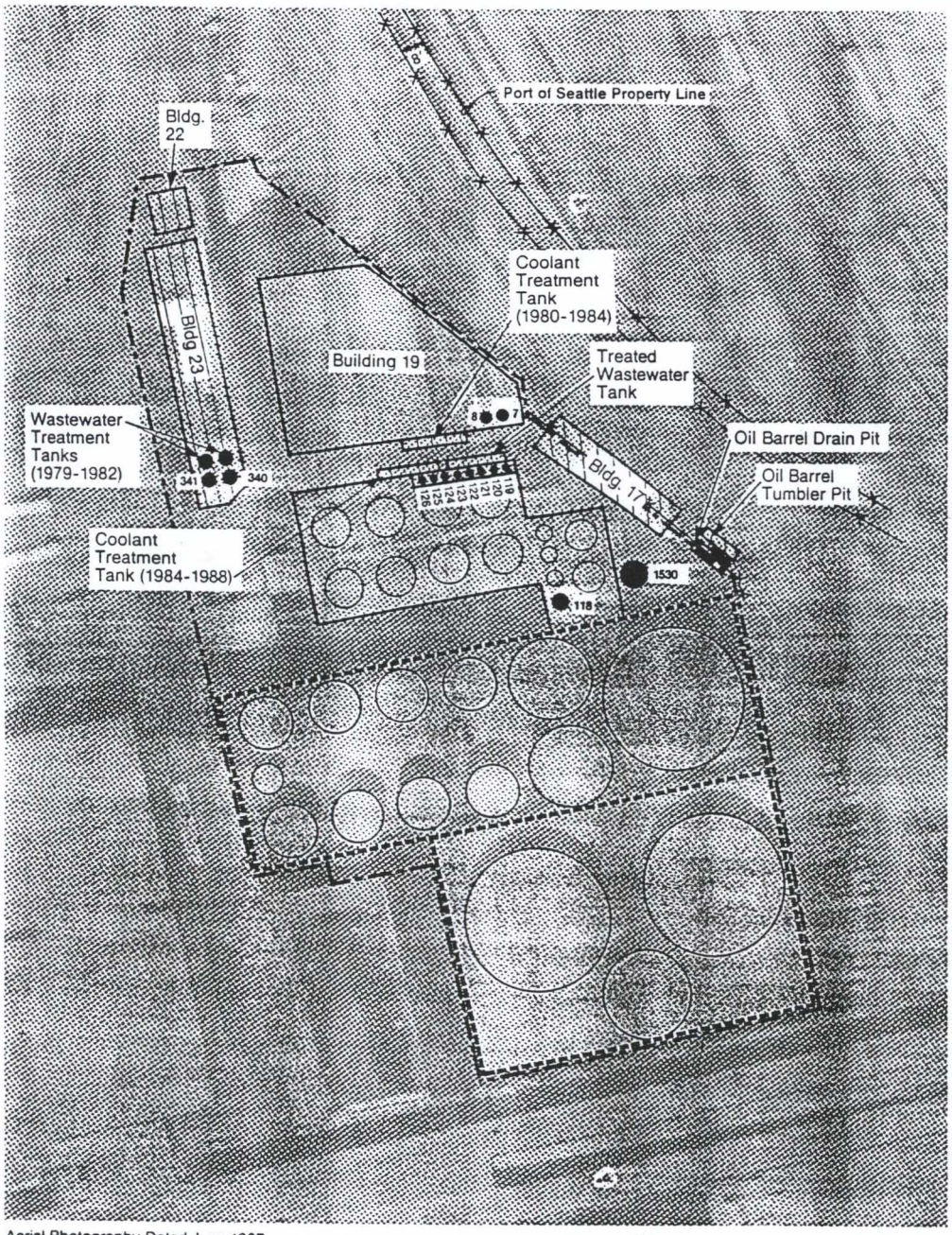
There is no information on release controls and history of releases for this SWMU.

Release Potential and Rationale

Because the past condition of this SWMU is not known, the potential for soil contamination from this SWMU is unknown.

4.1.8 SWMU 24 - SLUDGE DISPOSAL

An area of sludge disposal at the northeast corner of the BEI facility was noted in the early 1970s. This SWMU is shown on Figure 3 as 3.1. The sludge was disposed of by BEI personnel on railroad tracks and in sludge ponds (Port of Seattle 1992). Soil samples collected from this location



Source: Chempro 1988

FIGURE 7

CLOSED SOLID WASTE MANAGEMENT UNITS BEI TERMINAL 91 FACILITY

PRC **Environmental Management, Inc.**

indicated the presence of organic solvents about 3 to 5 feet below the paved surface (Port of Seattle 1987a).

Wastes Managed

Sludge is the primary waste disposed of at this location. Soil sample analysis indicated the presence of toluene, ethylbenzene, and total xylenes at 1,700, 7,800, and 22,000 parts per million, respectively (Port of Seattle 1987a).

Release Controls and History of Releases

This area is paved, and there are no release controls at this location. No action was taken to clean up this area (Hotchkiss 1992a).

Release Potential and Rationale

Contaminated soil already exists at this location. The potential for contaminant release to groundwater is high. Since the area is paved, the potential of contaminant release to air and surface water is low.

4.1.9 SWMU 25 - TRANSFER PIPING

Below-ground steel transfer piping was used to transfer product as well as dangerous and nondangerous wastes from tank to tank both within and outside of the small yard (Figure 6) (BEI 1992a). The transfer piping was approximately 500 feet long and made of 3- to 6-inch piping. The unit was removed from service, decontaminated by flushing, and filled with concrete in March 1991. According to BEI records, no information on releases from this unit is available (BEI 1992a). However, Port of Seattle records indicated that on July 2, 1974, Port of Seattle investigators toured the BEI tank farm and pumphouse area at Terminal 91 and reported that ground surrounding some of the tanks was saturated with oily sludge. The pipe alley had been flooded, and oily residue was seen on site. During this tour, stairs and walkways were found to be slippery from the spilled oil. Trucks were allowed to dump oil on the ground outside the tank wells. Oil had seeped out of the tank farm into the storm sewer that led to Elliott Bay (Port of Seattle 1974). No information on cleanup activities at this location is available.

Wastes Managed

The below-ground piping was used to transfer waste oil water and waste oil designated as dangerous and nondangerous waste from tank to tank.

Release Control and History of Releases

Port of Seattle records indicate that ground in this area was saturated with oily sludge. The pipe alley had been flooded, and oily residue was present on site. Trucks dumped oil on the ground outside the tank farm wells. Oil had seeped out of the tank farm into the storm sewer that led to Elliott Bay (Port of Seattle 1974).

Release Potential and Rationale

This unit was removed from service, decontaminated by flushing, and filled with concrete in March 1991. Oil release from this unit into the soil and Elliott Bay were reported in 1974 (Port of Seattle 1974). No information on cleanup of contaminants is available at this unit. Because of the observed oil release, potential of release to soil, groundwater and surface water is high at this location, and since the spill was observed nearly 19 years ago, and the VOCs would be already volatized, the release potential to air is low.

4.1.10 SWMU 26 - TRACKS WEST OF BUILDING 19

Approximately 6,000 to 10,000 gallons of bunker fuel were released to asphalt and soil west of Building 19 (Figure 7) in December 1977 or January 1978 (Chempro 1988). This release was caused by a steam pump hose breaking from a rail car valve during unloading. The bunker fuel was released into storm drains in the immediate vicinity. To clean up the spill, the released oil was pumped to an on-site tank, residue was removed with shovels and absorbent materials, and the contaminated area was cleaned with detergent and steam cleaners (Chempro 1988). There are no soil sampling data available to verify that the contamination was limited to the removed residue.

Wastes Managed

Bunker fuel potentially containing metals, VOCs, and SVOCs was released into the soil and storm drain at this location.

Release Control and History of Releases

Bunker fuel was released into the soil and storm drain. The spill was cleaned up using shovels, absorbent materials, detergent, and steam cleaners. No soil sampling data are available to confirm that the release was limited to the removed residue.

Release Potential and Rationale

Release of contaminants were observed in the soil and storm drain (Chempro 1988). Contaminants were recovered, but no sampling data are available to indicate the release was limited to the recovered residue. Since no confirmation results are available, potential of soil and groundwater contamination is considered moderate at this location. Potential of contaminant release to air is considered low because of the age of the spill, and release potential to surface water is low since stormwater at BEI is treated before it is discharged to Elliott Bay.

4.2 SOLID WASTE MANAGEMENT UNITS AT PANOCO

The following SWMUs and tanks operated by PANOCO were identified during the VSI and through the review of EPA and Ecology files.

4.2.1 SWMU 27 - CONCRETE BERMS

Three concrete berms at the PANOCO facility were observed to contain oily rainwater (photograph 5). This area is inactive and was used in the past to store contaminated soil from the 1983 oil spill at the BEI facility. The contaminated soil was removed, and the concrete berms were cleaned out in 1990 (PRC 1992). Rainwater collected in the berms is pumped out to PANOCO's tank farm periodically.

Wastes Managed

Oily contaminated soil was previously stored at this location, but was removed in 1990. Rainwater collected in the concrete berms appeared to be oily. The exact composition of this waste is unknown, but it may include VOCs and SVOCs associated with petroleum products.

Release Controls and History of Releases

Contaminated soil was stored inside the concrete berms, which are currently partially filled with storm water. There is no evidence of release from this location.

Release Potential and Rationale

The area is paved with concrete and surrounded by concrete berms. The integrity of the concrete pavement and berms could not be determined because they were not inspected closely. The potential for contaminant release to the soil, groundwater, surface water, and air pathways is low to moderate because berms were cleaned out in 1990.

4.2.2 SWMU 28 - BUILDING 127

Building 127 is used as the boiler fuel feed manifold and distribution center (photograph 6). Fuel is pumped from tank 113, south of building 127, to the warehouse boiler northwest of building 127 in the main warehouse (building 19). During the VSI, an open drum containing waste oil and water and oily rags was seen inside this building. Water mixed with boiler fuel had accumulated in the large catch basin beneath the pipelines that feed the boiler. The pipelines are placed on a catch basin. During the VSI, it was difficult to determine the condition of the catch basin because of the presence of wastewater and boiler fuel in the basin. The standing liquid appeared to be approximately 8 inches deep. This building is an active unit. The unit began operations in 1926.

Wastes Managed

Waste oily water (boiler fuel) is accumulated in the catch basin. Waste oil and water and oily rags are collected in an open 55-gallon drum. The exact composition of these wastes is unknown, but they may include VOCs, SVOCs, and metals.

Release Controls and History of Releases

Oil pipelines are located over a concrete catch basin. The integrity of this catch basin could not be determined during the VSI, but it appeared to be very old, like the building. The 55-gallon drum containing waste oil and water was uncovered and stored on a concrete floor without secondary containment. If the catch basin or the drum were to leak, soil and groundwater would be potential pathways of concern. There is no documentation of releases from this location.

Release Potential and Rationale

The integrity of the catch basin could not be determined during the VSI. Any crack in the catch basin would allow waste leakage to the soil and groundwater since the basin is filled with an oily wastewater. A drum was uncovered and placed on a concrete floor without secondary containment. There is a potential for oil spills from the drum. The likelihood of release to the soil and groundwater pathway is moderate because of the age of the building and the possibility for cracks in the catch basin. Potential of contaminant release to surface water is low. The likelihood of release to the air is high since the drum and the oily wastewater in the catch basin were not covered.

4.2.3 SWMU 29 - PIPELINE LEAK

The pipeline leak is located south of the guard shack at the West Garfield Street entrance and west of the retaining wall and Lake Jacobs (Figure 8). One monitoring well in this area, MW-3, had

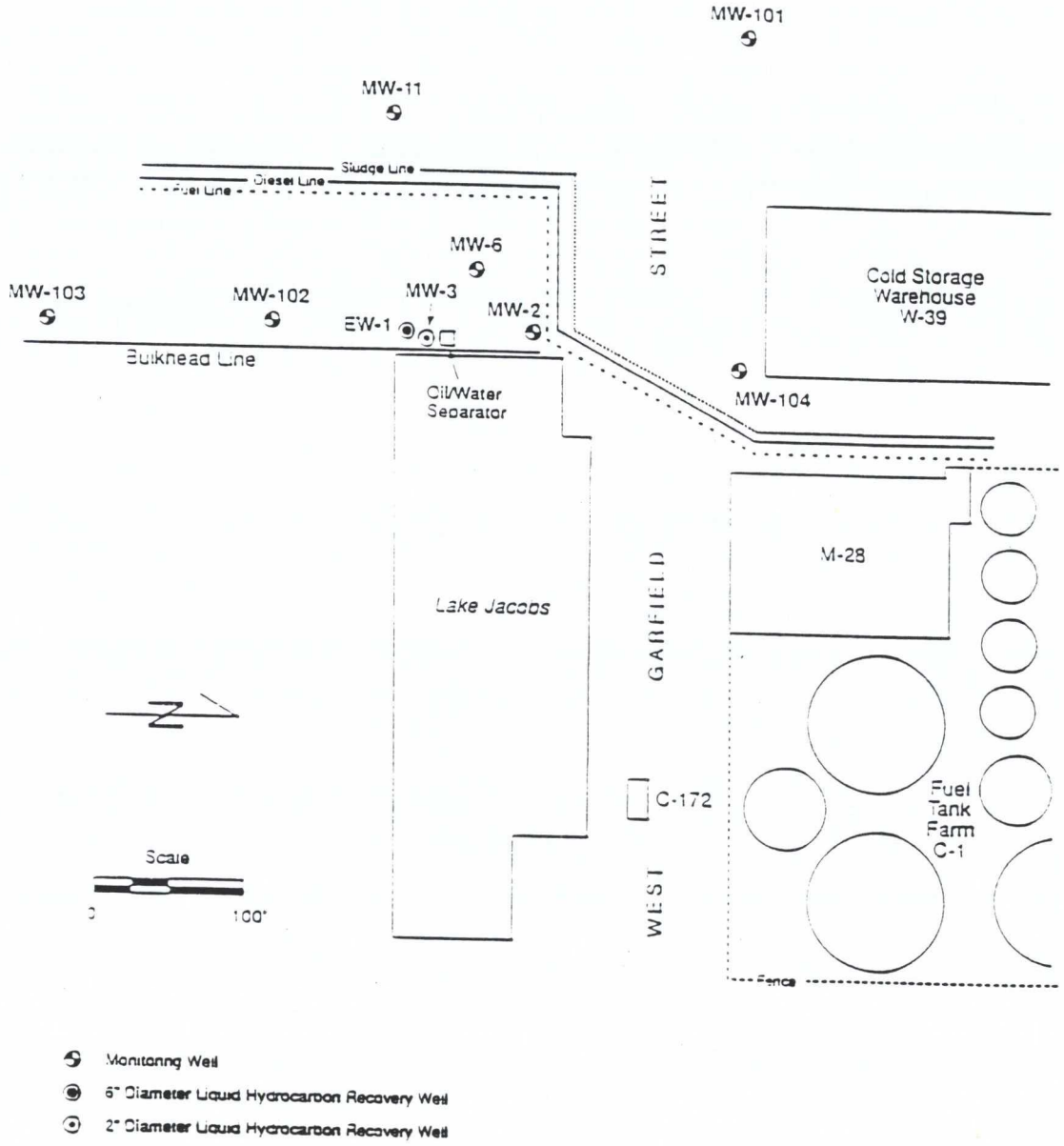


FIGURE 8

HYDROCARBON EXTRACTION SYSTEM MONITORING WELL LOCATIONS
PANOCO TERMINAL 91 FACILITY

Source: Converse 1992a

PRC Environmental Management, Inc.

measurable floating product, ranging in thickness from 0.24 to 0.69 feet. A product sheen observed on Lake Jacobs located immediately adjacent to MW-3 was thought to be seeping through cracks in the retaining wall (Converse 1990b). The areal extent of free product encountered in MW-3 is constrained by monitoring wells MW-102, MW-11, MW-6, and MW-2 (Figure 8). During excavation of a portion of the pipeline just east of MW-11, a thin 0.01-foot product layer was encountered on the water table. It was estimated that between 340 to 1,370 gallons of free product was present on the site in the area around MW-3 (Converse 1990b). Soil samples collected from this area confirmed presence of diesel. No VOCs or SVOCs were detected (Hart Crowser 1989). The exact source of the leak was never identified (Hart Crowser 1989). PANOCO ceased using the suspected pipeline and now believes they have controlled the problem.

Wastes Managed

Wastes managed at this location include diesel fuel.

Release Control and History of Releases

Floating product was observed on Lake Jacobs. Liquid hydrocarbon recovery system (SWMU 30) was installed to recover the released product. Soil samples indicated the presence of diesel fuel in this area.

Release Potential and Rationale

Presence of diesel fuel was confirmed in the soils sampled, and floating product was also observed on Lake Jacobs. Potential of contaminant release to soil, groundwater, and surface water is high because of observed release. Potential of contaminant release to air is low since the leak appeared approximately 4 years ago and has since been stopped.

4.2.4 SWMU 30 - LIQUID HYDROCARBON RECOVERY SYSTEM AND WASTE OIL DRUMS

Because floating diesel was found on Lake Jacobs (short fill lagoon) in the vicinity of the pipeline operated by PANOCO, a liquid hydrocarbon recovery system was installed for remediation of what is believed to be a pipeline leak (photograph 7). Liquid hydrocarbon is recovered with an all-pneumatic system, total fluids pump installed in a 6-inch-diameter extraction well (EW-1) and a 2-inch-diameter monitoring well (MW-3) (Figure 6) (Converse 1992a). Recovered liquid hydrocarbons are separated from water with a Quantek coalescing plate oil/water separator (Converse 1992a) that discharges groundwater effluent to the Municipality of Metropolitan Seattle sanitary sewer system under permit No. 7597 (Converse 1992a). The separated phase is stored in a

double-walled product storage tank (Converse 1990b). This permit requires effluent monitoring for priority pollutant metals, VOCs, SVOCs, fats, oil, grease, cyanide, pH, temperature, soluble sulfide, and atmospheric sulfide. The recovered waste oil is stored on site in 55-gallon drums (Converse 1992a), which are kept on a bermed concrete floor (PRC 1992). Approximately 47,760 gallons of fluids were recovered between January 15, 1991, and February 7, 1992. This unit is active.

Wastes Managed

Oil-contaminated water and waste oil are the primary wastes managed at this location. These wastes may contain metals, VOCs, and SVOCs associated with petroleum products.

Release Controls and History of Release

Diesel fuel was released to the water table before the hydrocarbon recovery unit was installed (Converse 1992a). The liquid hydrocarbon recovery system intake lines are equipped with floats designed to maintain the intake at the top of the air/liquid hydrocarbon interface. The 55-gallon drum and the hydrocarbon recovery unit are placed on a bermed concrete floor behind wires. There is no documentation of release from the hydrocarbon recovery system nor any visual evidence of a release.

Release Potential and Rationale

The potential for release from this unit to all media is low. The recovery system and drums are placed within secondary containment and appear to be in good condition.

4.2.5 SWMU 31 - OIL BLENDING STATION

The PANOCO-operated oil blending station is located on the southern end of Pier 91. Fuel is blended to requested specifications (photograph 8). This unit is constructed of steel with a catch basin that drains into a blind sump located beneath the unit. This area is covered with a roof. Since oil was accumulated in the sump, the integrity of the sump could not be determined during the VSI. The oily waste from the sump is pumped out by PANOCO and treated by BEI as needed (PRC 1992).

Wastes Managed

Waste oil resulting from oil blending is the primary waste managed at this location; its exact composition is unknown, but it may include metals, VOCs, and SVOCs associated with petroleum products.

Release Controls and History of Releases

Release controls at this station consist of a roof cover and a catch basin beneath the oil blending station, which in turn drains into a sump. During the VSI, an oily sheen was noticed on the pavement on one side of the oil blending station. Groundwater and soil are potential pathways of concern in the event of cracking or leaking from the sump and the catch basin. Pipelines from the oil blending station are tested hydrostatically every 6 months for leaks (Markwood 1992). There is no documentation of past releases from this location.

Release Potential and Rationale

No information on the integrity of the sump is available. An oily sheen was observed at the pavement around the oil blending stations. Because of the small volume of oil observed around the stations, the likelihood of contaminant release to air is low. The likelihood of contaminants reaching surface water during a storm is moderate. The likelihood of release to the groundwater and soil pathways is considered moderate because of the unknown status of the sump.

4.3 SOLID WASTE MANAGEMENT UNITS AT CITY ICE

This section describes City Ice SWMUs identified during the VSI and the file review.

4.3.1 SWMU 32 - WASTE REFRIGERATION OIL TANK

Spent refrigeration oil is generated at Buildings W-39, W-40, W-390, M-28, B-391, and B-392 (Figure 5), which are leased by City Ice from the Port of Seattle. Approximately 300 gallons of waste oil from the cooling systems is generated every 2 years from all of these buildings (Suelzle 1992). This waste oil results from small releases collected in open 5-gallon buckets (photograph 9) located on a concrete floor with no secondary containment, and from routine system maintenance (photograph 10). The waste oil is periodically emptied into a metal tank stored on the concrete floor inside of the maintenance area (photograph 11). This tank appeared to be slightly rusty although it was in adequate condition. The waste oil is picked up and reprocessed by United Drain Oil of Seattle, Washington (Suelzle 1992).

Wastes Managed

Wastes managed at this location include waste oil resulting from routine refrigeration maintenance and small releases. The exact composition of these wastes are unknown, but they may contain metals, ammonia, VOCs, and SVOCs.

Release Controls and History of Releases

The waste oil is collected in buckets and in a rusted tank, and no secondary containment is in place; however, the entire area is paved. There is no documentation of release from this waste management unit.

Release Potential and Rationale

Potential contamination of groundwater and surface water from the buckets is low since they are placed on a concrete floor inside the building, though the buckets are uncovered and are not within secondary containment. There is a low potential for spills from the buckets. The potential of contaminant release from the uncovered buckets to the air is high; and the potential for release to the soil is moderate. The tank appeared to be rusty, but not leaking. There is only a low potential for contaminant release to air, soil, groundwater, and surface water from this tank.

4.3.2 SWMU 33 - STORAGE AREA OUTSIDE BUILDING W-47

Building W-47, leased by City Ice, is west of the Port of Seattle/Terminal 91 property (Figure 5). This building is one of the two designated for demolition in 1993. Sixteen 55-gallon drums were seen outside building W-47 (photograph 12). Some of the drums appeared to be empty, and the labels of others indicated that they contained paint wastes. In addition, one old refrigeration unit (photograph 13), one 55-gallon drum labeled "transformer oil" (photograph 14), one 15-foot-tall bin with unknown contents (photograph 15), twelve 55-gallon drums labeled concrete curing (photograph 16) secured behind wiring, and number of propane tanks were seen at this location. This area was covered with a roof. The drums were stored on wooden pallets.

Wastes Managed

As indicated by the labels on the 55-gallon drums, paint wastes, transformer oil that may contain PCBs, and concrete curing compounds are stored in these drums. In addition, an old refrigeration unit, which may still contain refrigeration oil or refrigerant, and a number of propane tanks were stored at this location. It is unclear whether the transformer oil and concrete curing compounds are wastes.

Release Controls and History of Releases

The 55-gallon drums were stored on wooden pallets with no secondary containment other than asphalt flooring. This is covered with a roof. There is no documented information on releases at this location.

Release Potential and Rationale

Drums had no secondary containment, but appeared to be in good condition. The potential for release of paint wastes, transformer oil, concrete curing compounds, and refrigeration oil to surface water and soil is low. The potential for release of propane to the air is moderate because of unknown tank conditions. The potential for release of propane gas to soil, groundwater, and surface water is low.

4.3.3 SWMU 34 - STORAGE INSIDE BUILDING W-47

The northern portion of the warehouse is operated by City Ice and is used to store fish meal and chemical waste containers. The northeast portion of this area was dark during the VSI; however, in faint sunlight, the following items were observed inside building W-47 (Figure 5): eight 55-gallon drums of motor oil (photograph 17); twenty-five 1-gallon containers of mineral acid (photograph 18), which had released some material to the adjacent pavement (photograph 19); three 5-gallon drums of mineral thinner (photograph 20) labeled "Danger - Combustible"; a number of 55-gallon drums with unknown contents (photographs 21 through 24); one transformer with an open drip pan that contained an oily liquid (possibly transformer oil) (photograph 25); a 5-gallon bucket of kerosene (photograph 26); a container of fiberglass compound (photograph 27); a 5-gallon container of resin solution labeled "flammable liquid" (photograph 28); a number of 5-gallon buckets with unknown contents (photograph 29); and a number of miscellaneous wastes such as ropes and cardboard boxes (photographs 30 and 31). The transformer, drums, and buckets were placed on top of wooden pallets. In addition, a locked room inside building W-47 could not be seen, but was unlocked for investigation on December 4, 1992. The following items were observed in this room: a number of hydraulically driven fish processing machines, one partially full 55-gallon drum labeled "corrosive material" containing purechlor sanitizer, and a number of freon cylinders without any security chains. The equipment and containers were stored on the concrete floor. Immediately on top of this room, 30 to 40 feet above the ground next to the ceiling were shelves of several 5-gallon buckets (photograph 32), and four 55-gallon drums (photograph 33) whose labels could not be read from a distance. A Port of Seattle representative reported that the 5-gallon buckets were labeled "germicidal and fungicidal agents containing iodine." One of the 55-gallon drums was partially full and labeled "factory hydraulic oil." The other three drums were empty, but were labeled as diesel fuel with PANOCO tags. In addition, stacks of plastic trays and pieces of polyvinyl chloride piping were stored here. Next to this room was an area where waste food containers, other rubbish, and one 5-gallon bucket of corrosion inhibitor were stored (photograph 34).

Wastes Managed

Material stored in this location include: motor oil, refrigeration oil, mineral acid, mineral thinner, transformer oil, kerosene, fiberglass compound, resin solution, corrosive inhibitor, corrosive compounds, freon, germicidal and fungicidal agents containing iodine, hydraulic oil, and diesel fuel. There were also a number of drums with unidentified contents. It is not clear which of these drums actually held waste.

Release Controls and History of Releases

The transformer, drums, and buckets were stored on wooden pallets. The transformer oil had been collected in an open pan that was placed on the floor. There is no secondary containment besides the building itself and the concrete floor at this location. The integrity of the concrete floor could not be determined since the interior of building W-47 was dark during inspection. A contaminated area on the floor next to the containers of mineral acids was observed. No other history of releases from this unit was found. The building is scheduled for demolition.

Release Potential and Rationale

The possibility of transformer oil spills from the open container is high. The potential of contaminant release to air is moderate. The potential for contaminant release to soil groundwater, and surface water is low since the area is paved and containers are kept inside the building. The potential for the spilled mineral acids to reach surface water is low since the spill is inside the building. Since the building is old and the integrity of the flooring could not be determined, the potential for contamination of soil is moderate. The potential of groundwater contamination at this location is low. The contaminant release potential from the mineral acid spill to air is moderate because of the presence of the spills and the small quantity of material stored at this location. The potential for leaks from the other drums and containers stored in this area is moderate, but the likelihood of contaminant release from these containers to the building and into the air, soil, groundwater, and surface water is low.

4.4 SOLID WASTE MANAGEMENT UNITS AT DAS

This section describes SWMUs located in the DAS area at Terminal 91.

4.4.1 SWMU 35 - CAR WASH STATION

The car wash station is located at building W-158 (Figure 5) at the north end of the area leased by DAS (photograph 35). At the station, old aquacoating is removed from the exterior of automobiles using degreasing soap, and new aquacoating is applied. Old aquacoating is removed using

degreasing soap. Discharge from aquacoating removal is released to the sewer system, where it is transferred to the Municipality of Metropolitan Seattle before it is discharged (Gagner 1992). However, during the VSI, runoff from the aquacoating removal process was observed running out of the car wash station and entering the storm water system.

Wastes Managed

The degreasing solution used to remove aquacoating is a strong basic solution containing aqua ammonia, which is a hazardous constituent listed in 40 CFR Section 302.4. New aquacoating solution containing antioxidant and isopropyl alcohol (Appendix C) is reapplied to cars at this location.

Release Controls and History of Releases

Drains within building W-158 are designed to collect aqua ammonia wastewater from car washing and direct the wastewater to the Municipality of Metropolitan Seattle sewer system; however, this solution was observed being discharged to an outdoor storm drain during the VSI. No other information on the past release history at this location is known.

Release Potential and Rationale

The potential of contaminant release from this SWMU to air and surface water is high because the contaminants are volatile, run out in the open, and enter the storm drain. The potential for contaminants to reach the soil and groundwater is low, and it depends on integrity of underground storm sewer system.

4.4.2 SWMU 36 - PAINT AND MOTOR OIL WASTE IN BUILDING C-154

Waste paint and motor oil were stored separately in two 55-gallon drums next to building C-154 (Figure 5), on the northern end of DAS-leased facilities (photograph 36). These drums, which appeared to be in good condition, were covered with lids and placed on pavement. These wastes are shipped off site every 6 months. DAS generates approximately ten 55-gallon drums of wastes per year (Gagner 1992).

Wastes Managed

During the VSI, waste paint and motor oil were the only wastes stored at this location. These wastes may contain metals and VOCs, and are potentially characteristic RCRA hazardous wastes for toxicity.

Release Controls and History of Releases

The two drums were placed on top of pavement without any release controls. There is no documentation of releases at this location.

Release Potential and Rationale

Drums appeared to be in good condition; however, there is no secondary containment. The potential for contaminant release to the soil, groundwater, surface water, and air is low.

4.4.3 SWMU 37 - PAINT FILTER WASTE STORAGE AREA

Filters are used at the DAS paint booth in building C-155 to prevent paint particles from escaping the building and entering the environment. Filters cover the entire side walls and ceiling of the paint booth. The isocyanate-contaminated filters are removed every month from the side walls and are stored inside the building for up to 6 months until disposal. The facility is designated as a small-quantity generator. The ceiling filters are removed once a year and are considered nonhazardous wastes (Gagner 1992).

Wastes Managed

Waste filters generated in the paint booth are contaminated with paint particles and isocyanates. Contaminated filters are generated every month.

Release Controls and History of Releases

Filters are stored in drums inside a locked room in building C-155. This room was not open for inspection during the VSI. There is no documentation of releases at this location.

Release Potential and Rationale

Since filters are stored inside the building and inside drums, the likelihood of release to soil, groundwater, and surface water is low. The potential for release of paint particles to air is moderate during the time the contaminated filters are handled.

4.4.4 SWMU 38 - SHORT FILL

DAS uses the short fill area located next to Lake Jacobs to park cars and trucks once they are unloaded from ships. The short fill area consists of two berms connecting Piers 90 and 91 and dredged material placed between them. The berms are long mounds with a high permeable sandy gravel (structural fill) core covered with rip-rap. The low permeable contaminated dredged fill

was placed between the berms before being topped with approximately 16 feet of uncontaminated structural fill and finally paved with asphalt.

The Terminal 91 Short Fill Project was designed, completed, and monitored with the oversight of the U.S. Army Corps of Engineers, EPA Region 10, and Ecology over the period between 1984 and 1986. The fill was designed with the objective of adequately containing the contaminants present in the dredged sediments. The contaminated material placed in the short fill most likely would meet today's standards for open water disposal (i.e., Puget Sound Dredged Disposal Analysis) (Malek 1993).

The dredged materials contained industrial contaminants such as metals, VOCs and SVOCs. Overall confinement is shown to be related to the interrelationship between the hydraulics and biogeochemistry of the material as described below.

First, the low permeability of the dredged material limits the overall flow rate and transport of contaminants through the facility. Second, the saturated anoxic conditions within the dredged material limits the release of inorganic and organic contaminants from the dredged material and into the groundwater. Third, the highly permeable berm allows tidal action to constantly mix fresh, oxygenated seawater deep into the berm. This fresh oxygenated seawater reacts with any reduced inorganic or organic contaminants that are being slowly released from the dredge material at very near the berm-dredged material interface. This results in the precipitation and immobilization of the inorganic contaminants along with the enhanced aerobic biodegradation of any organic contaminants deep within the berm. Fourth, any remaining contaminants not fully immobilized or degraded in the inner portions of the berm are significantly diluted in the outer portion of the berm by tidal mixing and dispersion (Converse 1992b).

The regulatory agencies worked with the Port of Seattle to develop the short fill design, including a monitoring system and performance criteria, and a contingency plan outlining responses the Port of Seattle would undertake if unacceptable contamination occurred. These requirements were contained in a permit from the U.S. Army Corps of Engineers and a consent agreement with Ecology (Malek 1993).

A system of monitoring wells was placed in the contaminated dredge fill, in the cap material, and in upgradient groundwater flow direction from the short fill. Well locations were chosen to best monitor the performance of the system in terms of hydraulic flow and contaminant

concentrations. In all, the monitoring demonstrates that the containment structure meets regulatory and environmental requirements outlined in the consent agreement between the Port of Seattle and Ecology (Converse 1992b).

Wastes Managed

Mildly contaminated dredge material potentially including metals, VOCs, and SVOCs were used to fill between the berms.

Release Control and History of Releases

This dredged material is placed on fill berms and is covered with approximately 16 feet of clean fill cap (Converse 1992b). Monitoring wells placed in the dredge fill, cap material, and upgradient groundwater flow direction are used to monitor release of contaminants.

While some levels for a few metals including nickel were elevated in the south berm wells, it was shown that these metals came from the clean structural fill in the berm itself and not from the contaminated dredge material (Converse 1992b).

The biological and geochemical processes occurring within the berm, namely precipitation, immobilization, and biodegradation, are the same processes used in wastewater and contaminated groundwater treatment systems (Converse 1992b).

Data collected over the past 5 years indicate there are no detectable organic contaminants and only low levels of metals within the berm that are from the berm itself. Low level contaminants in the berm have been detected in concentrations below saltwater standards and are well below 10 times the sampled background stations (Converse 1992b). Throughout the monitoring period, sampling clearly showed the short fill had met and exceeded performance criteria (Converse 1992b).

Release Potential and Rationale

The area is lined with clean berms and is capped with 16 feet of clean fill and asphalt cover. The short fill area is periodically monitored. The short fill was completed under the oversight of EPA, U.S. Army Corps of Engineers, and Ecology. Groundwater has been monitored over the past 6 years at this location in accordance with a consent agreement between the Port of Seattle and Ecology and a permit with the U.S. Army Corps of Engineers. The monitoring results indicate that releases from the fill have and continued to meet the regulatory requirements of the consent agreement (Malek 1993).

Because the short fill area is placed directly within Elliott Bay, soil and groundwater are not pathways of concern. The short fill area is covered with clean structural fill and asphalt, and the potential of contaminant release to air is low. The area is also lined with clean fill and monitored regularly, thus making release potential to surface water low.

4.5 OTHER SOLID WASTE MANAGEMENT UNITS AT TERMINAL 91

The following SWMUs were also identified during the VSI. They are owned by the Port of Seattle and have unknown operators.

4.5.1 SWMU 39 - WASTE STORED BENEATH FREEWAY

An area under the freeway is used as a storage location for miscellaneous waste items was identified during the VSI. An inactive heat exchanger (photograph 37), a battery pack containing acids and explosive gases (photograph 38), stacks of tires, a trailer, and number of unlabeled 55-gallon drums were seen at this location. One 55-gallon drum was located next to a sewer discharge point (photograph 37). One 55-gallon drum on a wooden pallet was also observed at this location (photograph 39). The contents of these drums could not be determined.

Wastes Managed

The types of wastes stored in the 55-gallon drums are unknown. The battery pack stored at this location contains explosive gases and acids.

Release Controls and History of Releases

This area is paved with asphalt. An oily stain was observed near the sewer discharge point next to the 55-gallon drum. There is no previous documentation of releases at this location, and there is no secondary containment for the drums at this location.

Release Potential and Rationale

The likelihood of contaminant release from the drums to the sewer system is moderate because of the proximity of the drum to the sewer system. The potential for contaminants to be washed into the surface water during a storm is moderate. The likelihood of release from the observed oily stain to the air is also moderate, and the release potential to groundwater and soil is low.

4.5.2 SWMU 40 - DRUM STORAGE NEAR LAKE JACOBS

An outdoor area just south of Lake Jacobs is used to store a number of 55-gallon drums labeled as nonhazardous petroleum-contaminated soil (photograph 40). Some of the drums were on top of wooden pallets, some were on concrete, and some did not have lids.

Wastes Managed

Labels indicated that nonhazardous petroleum-contaminated soils were stored in the drums. No analytical data on these wastes are available, but they may contain VOCs, SVOCs, and metals.

Release Controls and History of Releases

The area beneath the drums is paved with asphalt; however, the sloped embankment adjacent to the drums toward Lake Jacobs is not paved. Some of the drums are stored on wooden pallets; some are stored on concrete pavement. A few of the drums did not have lids. During the VSI, an oily sheen was observed on the asphalt next to the drum storage area. There is no past documentation of releases at this location. Drum integrity appeared adequate at the time of the VSI.

Release Potential and Rationale

VOCs and metals that may be present in the wastes could migrate to the soil and be washed into surface water during a storm. The potential for release to soil and surface water is moderate since wastes are stored inside the drums. The potential for release to groundwater is moderate. The potential for release to air is high since some of the drums were not covered.

4.5.3 SWMU 41 - BERTH STATIONS

Nineteen berth stations were observed at Terminal 91, as shown on Figure 3. Berths C, D, E, F, G, H, I, J, K, L, and M are located on Pier 91. Berths 1 through 8 surround Pier 90. The berth stations are used for fuel loading. Some berth stations are located upon the pier and are contained within a box to trap leaks (photograph 41). Most of these berth station containers also have lids, but they do not fit tightly. Other berth stations are placed in the soil beyond the paved surface of the pier (photograph 42). These berth stations appear to have metal containment, but do not have lids. The completeness and integrity of the containment could not be determined since the berth stations and their containment were placed in the soil below ground. During the VSI, an oily sludge accumulation was noted inside many of the stations covered with wooden boxes. This sludge is pumped out on as-needed basis and is processed by BEI (Hotchkiss 1992b).

Wastes Managed

The accumulated oily sludge around the berth stations is the main waste managed at these locations. No analytical data on these wastes are available, but they may contain metals, VOCs, and SVOCs associated with petroleum products.

Release Controls and History of Releases

Some of the berth stations are covered by a wooden box on paved ground and some are uncovered on top of unpaved soil. The berth station covers do not fit tightly and therefore do not entirely restrict the entry of rain water. The integrity of the berth station containers appeared adequate. No records of past releases from these stations were found in the preliminary review.

Release Potential and Rationale

Sludge accumulation was observed in and around the berth stations. Releases from berth stations located above Elliott Bay would discharge directly into the bay, while discharges from berth stations in the ground would release to the soil. Release potential from the covered berth stations is moderate to surface water and low to all other pathways. The surface water release potential is moderate because in the event of a leak or an overflow from the station, contaminants would be released to Elliott Bay. The contaminant release potential from the berth stations placed in the ground is moderate to soil and low to all other pathways. Release potential to the soils is moderate because these berth stations are located in the soil, and the extent of secondary containment could not be determined.

4.5.4 SWMU 42 - TRANSFORMERS

During the VSI, a number of inactive transformers were observed next to building C-155, (photograph 43) at the northern end of the DAS-leased premises. The transformers were positioned on elevated concrete platforms. Another transformer was present next to building W-47 (photograph 44), which is leased by City Ice. This transformer was positioned on a bermed and elevated concrete platform.

Wastes Managed

Wastes managed at this location include transformer oil potentially containing PCBs. It is not clear whether the transformer oils used in these units have been removed, or whether the transformer oils remain and contain PCBs.

Release Controls and History of Releases

The transformers are located on concrete platforms. A concrete berm was placed around the transformer stored next to building W-47. There is no documentation of transformer oil or PCB releases at this location. No staining or other evidence of release at the concrete pads was observed during the VSI.

Release Potential and Rationale

Transformers appeared in good condition during the VSI. The likelihood of contaminant release to air, soil, and groundwater, is low at these locations. In the event of a storm, the likelihood of contaminant runoff reaching surface water is low around the bermed transformer next to building W-47, and moderate around the unbermed transformers next to building C-155.

4.5.5 SWMU 43 - WASTE OIL STORAGE SHED

A 10-foot-tall metal storage shed, with one open side was located outside building W-48 (Figure 3), which is scheduled to be demolished in early 1993. The northern end of the building is leased by Commercial Crating, Inc., a wooden box and crate construction company. The shed, used by Commercial Crating, Inc. has a metal bottom (photograph 45) and was used to house two open-bung 55-gallon drums containing waste oil and antifreeze waste, and 5-gallon buckets containing adhesive material. Some of the containers were labeled "flammable." A large tank with unknown contents was seen at this location. A small metal cabinet was used to store paint buckets.

Wastes Managed

Waste oil, antifreeze, paint, and adhesive material were stored at this location. Some of the containers were labeled "flammable." No analytical data on these wastes are available. These wastes may contain metals and VOCs.

Release Controls and History of Releases

The 55-gallon waste drums with open bungs and the 5-gallon buckets were stored inside a metal shed. The bottom portion of the metal box appeared to be corroded. No documented information on releases from this area is available.

Release Potential and Rationale

The potential for spills from the open-bung drums is high. Drums are within the corroded shed and the entire area beneath the shed is paved. The potential for contamination of soil,

groundwater, and surface water is low since these drums are contained in the shed. The potential for contaminant release to air is moderate.

4.5.6 SWMU 44 - STORM DRAIN AT NORTH OF TERMINAL 91

At the northern end of the Terminal 91 property, a storm drain enters the Port of Seattle property from the Burlington Northern railyard, connects to several catch basins, and exits north into the city of Seattle's vector truck dump site (Port of Seattle 1992). Oil was observed collecting in the first catch basin on the Port of Seattle property. The catch basin was cleaned, and the city of Seattle closed the drain to stop drainage into the vector truck dump site in 1989 and 1990. This drain was reopened because of backup onto Port of Seattle property (Port of Seattle 1992). During the VSI, an oil residue was observed on pavement around the storm drain next to the Burlington Northern railyard. This area is identified as 5.1 on Figure 3.

Wastes Managed

Waste oil was observed to be collected in the catch basin. The waste oil potentially contains metals, VOCs, and SVOCs.

Release Control and History of Releases

The storm drain enters into a catch basin. The integrity of the catch basin could not be determined during the VSI. An oily residue was observed on pavement around the storm drain.

Release Potential and Rationale

Because of the presence of oily residue on pavement around the storm drain and the unknown integrity of the catch basin, potential of contaminant migration to soil, air, ground water, and surface water is considered moderate.

4.5.7 SWMU 45 - STORM DRAIN AT CENTER OF TERMINAL 91

At the center of the Port of Seattle property, there is a 92-inch storm drain and combined sewer overflow discharge. Oily discharges from the drain were noted in 1980s, and were traced to the storm drain line connecting the system to the Burlington Northern railyard drainage (Port of Seattle 1992). Investigations by Ecology and the U.S. Coast Guard at the Burlington Northern railyard revealed a large quantity of oil entering the storm drain system through saturated soil caused by a leaking pressurized oil line for fueling the heaters in cabooses (Port of Seattle 1992). This line had been severely corroded by acid from maintenance practices on the batteries of the diesel and electric locomotives. There is no analytical information available on the waste oil at

this location. The leaking line was fixed by Burlington Northern, and oil was removed from the storm drain system (Port of Seattle 1992). This storm drain is identified as 5.2 on Figure 3. Contaminated soil has not been removed.

Wastes Managed

Waste oil potentially containing metals, VOCs, and SVOCs were managed at this location.

Release Control and History of Releases

Oily discharges from the storm drain were noted in 1980s. The oil was entering the storm drain through oil saturated soil caused by the pipeline corroded by acid.

Release Potential and Rationale

The oil has already contaminated the soil. No cleanup activity was conducted at this location. Potential of contaminant migration to soil and groundwater is high. Since the storm drain discharges directly to Elliott Bay, the potential of migration to surface water is also high. Potential of contaminant migration to air is low since the spill occurred almost 10 years ago; the VOCs wold be volatilized.

5.0 AREAS OF CONCERN

This section discusses AOCs identified during the VSI and file review. These areas may consist of one-time spill locations or areas of potential SWMUs.

AOCs 12 through 22 were identified as possible SWMUs. Known releases and undocumented possible releases before and during BEI operations (Chempro 1988) have been associated with these AOCs. These AOCs were not considered as SWMUs since sufficient information regarding the waste types managed at these areas was not available. AOCs 12 through 17 include possible SWMUs that were closed before BEI operations began. AOCs 18 through 20 include known releases to the environment both before and during BEI operations. AOCs 21 and 22 include undocumented possible releases to the environment before and during BEI operations.

5.1 AOC 1 - ALLEY BETWEEN BEI AND CITY ICE

Oily contaminated soil was noted in the alley between the BEI and City Ice facilities (photograph 46). This alley was covered with vegetation. A dead bird was seen here (photograph 47). The exact source of the soil contamination is not known.

5.2 AOC 2 - USTS ON TERMINAL 91 PREMISES

Underground storage tank investigations at Terminal 91 indicated soil contamination around tanks T-91-A, -B, -C, -G, -K, and -N. The compounds benzene, xylene, and total extractable petroleum hydrocarbons (TEPH) were detected at levels above Model Toxics Control Act cleanup levels in soil samples collected to a depth of 9 feet around Tank T-91-A (ERM 1990). Low levels of TEPH were present in the upper 10 feet of soil around Tanks T-91-B and T-91-C (ERM 1990). Soil excavation and samples collected in August 1989 to assess subsurface conditions around Tanks T-91-D, -E, -F, -G, and -N indicated soil and groundwater contamination resulting from releases at tanks T-91-G and T-91-N (ERM 1990). Elevated levels of TEPH were detected in soil samples collected at 7.5 and 14 feet below ground surface around Tank T-91-K (ERM 1990). Eleven inches of free product were found in an upstream well during the 1989 removal of Tank T-91-N (Port of Seattle 1992). The location of this release is identified as 3.4 on Figure 3. Hydrocarbon contamination of soil and groundwater in the vicinity of underground storage Tank T-91-N was documented during the investigation following construction of building W-390 (HLA 1990). Free product was observed during excavation of the foundation for building W-390 (Port of Seattle 1992). The location of this contamination is identified as 3.3 on Figure 3. The potential for groundwater contamination is high at these locations.

Locations of active, abandoned, and removed USTs at Terminal 91 are shown on Figure 3. The activity status, size, type, and the proposed removal date of these tanks are listed in table 1.

5.3 AOC 3 - OLD PIPELINES

Pipelines at Pier 91 associated with berths H, I, and J are in the process of abandonment (Hotchkiss 1992b). These pipelines have been flushed to remove product residue. Some of the pipelines at Pier 91 appeared to be oily and stained (photograph 48). The likelihood of releases to soil, groundwater, and surface water from these pipelines is moderate.

TABLE 1

TERMINAL 91 UNDERGROUND STORAGE TANKS

Tank Number	Status	Size (gallon)	Type	Proposed Removal Date
T-91A	active	3,000	gasoline	early 1994
T-91B	active	7,000	gasoline	early 1994
T-91C	active	10,000	gasoline	early 1994
T-91D	abandoned	10,000	diesel	early 1994
T-91E	abandoned	10,000	diesel	early 1994
T-91F	abandoned	10,000	diesel	early 1994
T-91G	abandoned	10,000	gas	early 1994
T-91H	active	12,000	heavy oil, boiler	early 1994
T-91I	active	672	diesel	early 1994
T-91J	possibly active	unknown	oil/water separator	unknown
T-91K	active	50	diesel	early 1993
T-91L	abandoned	unknown	oil/water separator	unknown
T-91M	removed	300	diesel	July 1987
T-91N	removed	672	diesel	December 1989
T-91O	removed	500	gas	unknown

5.4 AOC 4 - LEAKING GENERATOR

A leaking generator was observed next to building C-154 on DAS-leased premises. A yellow stain was observed on the pavement next to the generator (photograph 49). The nature of this contamination is unknown. The potential for contamination of soil and groundwater is moderate. The potential for contaminant runoff to surface water is likely if a storm drain is nearby. The location of the nearest storm drain should be determined. Chemical analysis of this waste material is needed to determine the potential for air contamination.

5.5 AOC 5 - PCB TRANSFORMER PADS

Two wipe samples were collected from the transformer pad at Terminal 91 in 1986 when PCB transformers around building W-38 were removed. Both wipe samples indicated the presence of PCBs higher than 100 $\mu g/100\ cm^2$ (GE 1986). The pad was removed and sent to the Chem-

Security Systems, Inc. landfill in Arlington, Oregon, in 1986 (Hotchkiss 1992c). There is no information on soil sampling to confirm that the extent of PCB contamination was limited to the pad. The potential for soil contamination is moderate at this area.

5.6 AOC 6 - HYDROCARBON CONTAMINATION, BUILDING W-40

During the 1991 soil boring installation at the new Elliott Bay Marine access ramp to the Southwest of Building W-40, leased by City Ice, hydrocarbon odors were noted (Port of Seattle 1992). This area is identified as 3.5 on Figure 3. There was no cleanup at this location (Hotchkiss 1992a). The potential for contaminant migration to groundwater is high at this location.

5.7 AOC 7 - CONCRETE APRONS

Petroleum hydrocarbons were noted in 1992 from soil borings installed for new concrete aprons on Piers 90 and 91. The location of the contamination is identified as 3.6 on Figure 3. Excavation of these contaminants revealed layers of old asphalt and creosoted timbers (Port of Seattle 1992), which may be the fill material used to construct the Terminal 91 area. These contaminants are still present at this location (Hotchkiss 1992a).

5.8 AOC 8 - PETROLEUM-CONTAMINATED SOIL AT BEI

In 1985, petroleum-hydrocarbon-contaminated soils were noted south of the BEI property and northeast of Lake Jacobs. The contaminated soils were identified during the excavation of a trench to relocate the storm drain. This AOC is identified as 3.7 on Figure 3. The sources of these contaminants are unknown, and no action has been taken to remove the contaminants (Hotchkiss 1992a). Potential of contaminant migration to groundwater is moderate because the soil is covered with asphalt.

5.9 AOC 9 - CONTAMINATED SOIL NORTHWEST OF TERMINAL 91

In 1985, petroleum-contaminated soil and oily water were noted in the excavations for new light standards (Port of Seattle 1992) at northwest corner of Terminal 91. This contamination is identified as 3.8 on Figure 3. The sources of these contaminants are unknown, and no action has been taken to remove the contaminants (Hotchkiss 1992a). The potential for contaminant migration from soil to groundwater is moderate at this location because the soil is covered by asphalt.

5.10 AOC 10 - TRIANGULAR AREA HIT

A triangular area east of Terminal 91 was observed to contain petroleum-hydrocarbon-contaminated soils. Soil samples collected from this area indicated elevated levels of TPH (PRC 1992). The Port of Seattle is considering this location for a fill station. No information on cleanup at this location is available. The potential for contaminant migration to groundwater is high at this area.

5.11 AOC 11 - OLD TANK FARM

An old tank farm to the north of Pier 91 was identified from Port of Seattle and Navy drawings. This tank farm was installed in late 1920s or early 1930s and was demolished by the Navy after 1942 (Port of Seattle 1992). No information on the use of these tanks is available. This tank farm is now paved over. This tank farm is identified as 4 on Figure 3. There is no documentation of releases at this location. Part of this tank farm is now covered by building W-40.

5.12 AOC 12 - BUILDING 17

This metal building was in use from 1926 to 1977 for drum cleaning, but the specific activities in this building are unknown. There is no documentation of releases for this AOC (Figure 7).

5.13 AOC 13 - TANKS 340 AND 341

This unit was an aboveground tank that began operation in 1926. The tank was closed some time between 1936 and 1977. No information on the type of wastes managed at this AOC is available, and there is no documentation of releases at this AOC (Figure 7).

5.14 AOC 14 - TANK 1530

This 63,000-gallon aboveground tank began operation in 1926 and was closed in about 1936. No information on the type of wastes managed at this unit is available, and there is no documentation of releases at this AOC (Figure 7).

5.15 AOC 15 - TANKS 119 THROUGH 126

These elevated aboveground tanks were in operation from approximately 1936 to 1948, and were formerly designated as tanks 50 through 57. No information on the types of wastes managed at these AOCs is available. There is no documentation of releases at this AOC (Figure 7).

5.16 AOC 16 - TANKS 7 AND 8

These 12,000-gallon steel aboveground tanks were in operation from 1944 to 1971 (Figure 7). The main waste managed at these tanks was lube oil. There is no documentation of releases at this AOC.

5.17 AOC 17 - OIL BARREL DRAIN AND TUMBLER PITS

These pits began operation approximately in 1950. The removal dates for these units are not available. These pits were below-ground concrete tanks. There is no information on the type of wastes managed at these pits, and there is no documentation of releases at this AOC (Figure 7).

5.18 AOC 18 - TERMINAL 91 PIPELINE SYSTEM

Six releases of bunker oil, black oil, and waste oil associated with the pipeline at Terminal 91 are reported for the period from 1978 to 1986 (Chempro 1988). The exact locations of these pipelines are not known.

There are no records to indicate that confirmation samples were collected to demonstrate contaminants removal. The potential for soil and groundwater contamination is moderate at all of the AOCs discussed below.

The first release was 42 gallons of bunker C fuel on March 11, 1978, onto asphalt paving. Some of this oil was released to a storm drain connected to Elliott Bay. This release was caused by an oil line breakage resulting from an earthquake. The spill was cleaned up with absorbent pads. Port of Seattle personnel repaired the pipeline (Chempro 1988).

The second release, on February 6, 1979, was 50 to 100 gallons of bunker oil fuel on asphalt in the Terminal 91 vicinity. The spill was caused by an overflowing valve pit and was contained on the dock (Chempro 1988).

The third release was a February 22, 1979, spill of 100 to 200 gallons of bunker C fuel on asphalt at Terminal 91. The release was caused by an overflowing valve pit and was contained on dock (Chempro 1988).

The fourth release was a March 22, 1979, spill of 2,000 gallons of black oil for fueling purposes. The release was caused by failure of a tee connection in the oil line belonging to BEI. The release occurred during the off-loading of a barge. The black oil was released onto Terminal 91 asphalt.

Approximately 2,000 gallons of oil were pumped up, and absorbent materials were used to clean up the spill (Chempro 1988).

The fifth release was a 1- to 2-gallon spill of waste oil into water and onto a dock on September 25, 1985. The spill was caused by leakage of a valve pit during dock transfer. An oily sheen was observed on water. The release was bermed, and cleaned up with absorbent pads and sorbent materials (Chempro 1988).

The sixth release is a 1986 spill of an unknown quantity of what may have been bunker fuel onto soil and asphalt. The release was the result of a ruptured pipeline near a truck loading area, where tanks 102 through 104 around the pipeline were being unloaded. The Port of Seattle replaced the damaged pipeline and repaired the asphalt paving (Chempro 1988).

5.19 AOC 19 - BERTH F

Approximately 100 gallons of diesel fuel were released into Elliott Bay on August 29, 1978. This release was the result of a malfunctioning valve. The spill was bermed and cleaned up with absorbent pads and sorbent materials (Chempro 1988).

5.20 AOC 20 - TANK 94

On July 5, 1980, between 63,000 to 113,400 gallons of oil were released to soil from Tank 94. This area was gravel-covered, unpaved, and within a diked yard. Soil piles in the yard, possibly from the spill, were removed in 1986 and 1987. Analytical results from soil pile sampling in July 1986 indicated that the soil was nonhazardous. The tank yard was paved in 1986 (Chempro 1988). A review of the analytical results indicates that the removed soils were contaminated with up to 8 ppm of PCBs. Potential of soil contamination at this location is moderate.

5.21 AOC 21 - BLACK OIL YARD

In 1987, pits at the black oil yard were identified around tanks 90, 91, and 92 (Figure 6) (Chempro 1988). Hoses and other cleanup debris from this area were observed in these pits, which were covered with plants and soil. These pits may be from Navy operations or from the November 1978 oil spill at this area. The potential for soil and groundwater contamination is high at this area.

5.22 AOC 22 - TANK BOTTOMS

Archive drawings of Terminal 91 indicate that the bottoms of tanks 96 through 100, 102, and 104 were replaced in the mid-1950s (Figure 6) (Chempro 1988). Drawings indicate that these tanks were underlain with approximately 1.5 inches of oiled sand on a 2.5-inch concrete base. During the tank bottom replacement, an additional 4 inches of oil-saturated sand was placed under these tanks. Drawings indicate the oil was possibly sulfur-free, grade number 4 or 5, and asphalt-based. The potential for waste oil migration to soil and groundwater is high at this location.

6.0 SUMMARY

PRC completed an RFA for those areas initially identified in the draft RFA report prepared for the BEI facility in 1988, as well as for additional portions of the Terminal 91 facility.

In general, there are several SWMUs and AOCs that have a high potential to release contaminants to air, soil, groundwater, or surface water, mainly as a result of past or current releases that have not been remediated, or because of less-than-ideal management practices; however, the majority of SWMUs and AOCs have a low-to-moderate potential.

SWMUs and AOCs identified at Terminal 91 are summarized in Sections 6.1 and 6.2, respectively.

6.1 SUMMARY OF SOLID WASTE MANAGEMENT UNITS

SWMU summaries for BEI, PANOCO, City Ice, DAS, and miscellaneous portions of Terminal 91 are discussed in Sections 6.1.1 through 6.1.5.

6.1.1 Burlington Environmental Inc.

BEI operates a hazardous waste storage and treatment facility at Terminal 91. BEI operated under the name of Chempro before fall of 1991. The draft RFA report (Tetra Tech 1988) identifies 17 SWMUs at this location. This site is being investigated under an RFI conducted in accordance with the 3008(h) order. SWMU 2, Tank 108 (part of SWMU 5), SWMU 12, SWMU 13, and SWMU 15 have been taken out of service since completion of the 1988 Tetra Tech, Inc. RFA. Nine additional SWMUs were identified by PRC at this location. SWMUs 18 through 20 include Tank 164, the sewer lines, and the API gravity separator, respectively. Tank 164 appeared to be in good condition. Soil around the sewer lines is still contaminated with BTEX. Groundwater at this

location is being investigated under an RFI. A small area of soil staining was also observed around the API gravity separator.

SWMU 21 is the abandoned oil/water separator. No information on past releases from this unit is available. The likelihood of contaminant release to soil and groundwater is moderate at this location. SWMUS 22 and 23 have been closed during BEI operations and include the wastewater treatment tanks and one treated wastewater tank. No information on the condition of these SWMUs and their release history is available. Potential for contaminant release to soil is unknown. SWMU 24 includes areas of sludge disposal. Soil is contaminated with petroleum products at this unit. The potential for contaminant release to groundwater is high at this location. SWMU 25 is the inactive transfer piping used inside and outside of the small yard. Release from this unit was observed in 1974. Potential of release to soil, groundwater, and surface water is high at this location. SWMU 26 is the tracks west of building 19, where release of bunker fuel to soil was observed. Cleanup was conducted at this location, but no confirmation sampling results are available. Potential of contaminant release to soil and groundwater is considered moderate.

6.1.2 PANOCO

PANOCO subleases approximately 60 percent of the BEI Terminal 91 facility to use as a marine fuel depot. A number of releases from the bunker C fuel transfer lines have reportedly resulted from line ruptures. Cleanup was undertaken to remove the released oil at these areas. There is no information on the cleanup of approximately 1,300 gallons of diesel fuel released into the soil at PANOCO. SWMUs 27 through 31 were identified at this facility. SWMU 27 is the concrete berms, SWMU 28 is building 127, SWMUs 29 and 30 are the pipeline leak into Lake Jacobs and hydrocarbon recovery unit with a 55-gallon oil collection drum, and SWMU 31 includes an oil blending station. The status of the berms and the sumps for SWMUs 27, 28, and 31 could not be determined. The potential for contaminant release from SWMU 27 to air, surface water, soil, and groundwater is low to moderate. The potential for contaminant release from the open drum and the catch basin of SWMU 28 to soil and groundwater is moderate. The potential for release to air is high since the drum and the catch basin were not covered. The potential of contaminant release from SWMU 29 to soil, groundwater, and surface water is high because of an observed release. SWMU 30 appeared to be in good condition with a low likelihood of release to all media. During the VSI, an oily sheen was observed around SWMU 31. The likelihood of contaminant release from SWMU 31 to soil, groundwater, and surface water is moderate.

6.1.3 City Ice and Cold Storage Company

City Ice stores and processes frozen seafood at Terminal 91 and subleases portions of the property to Arctic Alaska, Independent Packers, and Pacific Rim Consultants. Arctic Alaska repackages frozen fish, Independent Packers repackages fish for sale, and Pacific Rim Consultants operate a steel fabrication company. Pacific Rim Consultants employees were seen welding steel. Freshly primed steel beams were observed at the southern portion of building W-47.

SWMUs 32 through 34 were located on City Ice-leased premises. SWMU 32 is the waste refrigeration oil tank. Oil is collected in open buckets before it is transferred to the tank. The potential for contaminant release from the buckets to soil is moderate, and the potential for release to air is high. SWMUs 33 and 34 include wastes stored outside and inside building W-47, respectively. SWMU 33 includes a propane tank and a number of 55-gallon drums of paint waste, transformer oil, and concrete curing compound placed on wooden pallets. The potential for contaminant release to groundwater, surface water, and soil is low at this location. Potential of propane release to air is considered moderate. SWMU 34 includes containers of motor oil, refrigeration oil, mineral acids, mineral thinner, transformer oil, kerosene, fiberglass compounds, resin solution, and other compounds. These containers were placed on wooden pallets or directly on the concrete floor. Transformer oil was observed in an open pan. During the VSI, a contaminated area next to containers of mineral acids was seen inside building W-47. The potential for contaminant release to soil and air is moderate.

6.1.4 Distribution Auto Services

Property leased by DAS is used to process and store imported automobiles. SWMUs 35 through 38 were identified at this facility. SWMU 35 is the car wash station where aquacoating is removed and reapplied. During the VSI, runoff from aquacoating was seen entering the storm drain. The potential for contaminant release to air and surface water is high. SWMU 36, paint and motor oil wastes, were stored in 55-gallon drums that appeared to be in good condition. SWMU 37 is paint filter wastes stored in a locked room that was not open for inspection during the VSI. The potential for release of paint particles to the air is moderate during handling of contaminated filters. SWMU 38 is the short fill area used for parking cars by this facility. Potential of contaminant release to air and surface water is low at this location.

6.1.5 Miscellaneous Portions of Terminal 91

During the VSI, the northern portion of building 48 was not inspected because access was denied by the operator, Commercial Crating, Inc. Miscellaneous SWMUs were identified around

Terminal 91 and are summarized in the discussion of SWMUs 39 through 45. SWMU 39 includes miscellaneous wastes observed under the freeway, including an oil stain observed near one of the drums next to a storm drain. The potential for contaminant migration to air and surface water is moderate because of the drum's proximity to the storm drain. SWMU 40 includes drums of contaminated soil on wooden pallets near Lake Jacobs. An oily sheen was observed around the open drums. The potential for contaminant release to groundwater, soil, and surface water is moderate. Potential of contaminant release to air is high. SWMU 41 includes the berth stations around Terminal 91. Some of the berth stations were covered inside a box. Oil accumulation was observed around some of the berth stations. The likelihood of release to surface water and soil is moderate at these locations.

SWMU 42 includes inactive transformers on concrete platforms. Some of these transformers are placed within berms. The likelihood of contaminant release to surface water is moderate around the unbermed transformers. SWMU 43 is the metal waste oil storage shed. Two 55-gallon drums of waste oil and antifreeze waste with open bungs and containers of adhesive material were present inside this corroded metal shed. The potential for contaminant release to air is moderate. The potential for contaminant release to soil, groundwater, and surface water is low. SWMUs 44 and 45 include storm drains on the north and south ends of Terminal 91, respectively. During the VSI, oily residue was observed around the north storm drain. The potential for air, soil, surface water, and groundwater contamination is moderate at the north storm drain. The soil in the vicinity of the south storm drain is contaminated with waste oil. The potential for waste oil migration to surface water and groundwater is high at this area.

6.2 SUMMARY OF AREAS OF CONCERN

In addition to these SWMUs, 22 AOCs were identified and are summarized below.

AOC 1 includes an oily stain in the area between City Ice and BEI facilities. A dead bird was seen here. AOCs 2 and 3 consist of USTs and old pipelines around Terminal 91. Investigations indicated that soil is contaminated around tanks T-91-A, -B, -C, -G, -K, and -N. Oil has accumulated around abandoned pipelines. The potential for groundwater contamination is moderated to high at these locations. A yellow stain was observed around a leaking generator and is discussed under AOC 4. The potential for soil and groundwater contamination is moderate at this location.

AOCs 5 through 10 include a number of soil areas contaminated with PCBs or petroleum hydrocarbons. The potential for soil and groundwater contamination is high at these areas. AOC 11 includes an abandoned tank farm (for which no information on past activities and releases is available). AOCs 12 through 17 include possible SWMUs that were closed before BEI began operations at Terminal 91. These AOCs include building 17, a number of tanks, an oil barrel drain, and tumbler pits. No information on the type of wastes managed and the release history from these AOCs is available. AOCs 18 and 19 include known releases to the environment both before and during BEI operations. These AOCs include releases of bunker fuel, black oil, and waste oil into the soil, asphalt, and surface water. The potential for soil and groundwater contamination is moderate at these areas. AOC 19 includes a release of diesel fuel to Elliott Bay.

AOC 20 includes oil released from Tank 94 into soil. Potential of soil contamination at this location is moderate. AOCs 21 and 22 include undocumented releases to the environment both before and during BEI operations. These areas include the black oil yard where cleanup debris was found in pits, and oil-saturated sand under tanks 96 through 100, 102, and 104. The potential for soil and groundwater contamination is high at these AOCs. It is not known whether AOCs 12 through 22 are being investigated under the RFI in progress.

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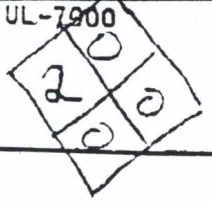
APPENDIX C

MATERIAL SAFETY DATA SHEETS

COATING TRANSIT REMOVER KATS UL-7000

MATERIAL SAFETY DATA SHEET



SECTION I

PRODUCT NAME OR NUMBER (as it appears on label)
KATS UL-7000 WATER BASE DETERGENT TRANSIT COATING REMOVER

MANUFACTURER'S NAME	EMERGENCY PHONE NO.
HANSON-LORAN CO., INC.	(714) 522-5700
ADDRESS (Number, Street, City, State, Zip) 6700 CABALLERO BLVD. - BUENA PARK, CALIFORNIA 90620	MANUFACTURER'S D-U-N-S NO. 008489668

HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO.
NON-HAZARDOUS

ADDITIONAL HAZARD CLASSES (as applicable)
NON-HAZARDOUS

CHEMICAL FAMILY	FORMULA
WATER BASE CLEANER AND DEGREASER	BLEND

SECTION II - INGREDIENTS

CAS REGISTRY NO	% W	% V	CHEMICAL NAME(S)	LISTED AS A CARCINOGEN IN NTP, IARC or 1910(z) (specify)
9036-19-5	10		Octylphenoxypolyethoxyethanol	Not listed
9004-82-4	6		Sodium Lauryl Ether Sulfate	Not listed
61790-63-4	5		Coco Diethanolamine	Not listed
None	6		Sodium Isopropylnapthalene	Not listed
77-92-9	5		B-Hydroxy-Tricarboxylicacid	Not listed
None	9		Phosphate Ester Potassium Salt	Not listed
7664-41-7	4		Aqua Ammonia	Not listed
7732-18-5	55		Water	Not listed

SECTION III - PHYSICAL DATA

BOILING POINT 212° F ___ C	SPECIFIC GRAVITY (H_2O=1) 1.1205
VAPOR PRESSURE ___ F ___ C 20°C ☐ mmHg ☐ psi	PERCENT VOLATILE BY VOLUME (%) 55% / PERCENT SOLID BY WEIGHT (%) 45%
VAPOR DENSITY (AIR=1) Heavier	EVAPORATION RATE (=1) Butylacetate = 1 Slower
SOLUBILITY IN WATER 100%	pH= 12.0
APPEARANCE AND ODOR Amber color with a cedar & ammonia odor	IS MATERIAL: (LIQUID) SOLID GAS PASTE POWDER

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT ___ F ___ C Method used Non-flammable	FLAMMABLE LIMITS: LEL _____ UEL _____

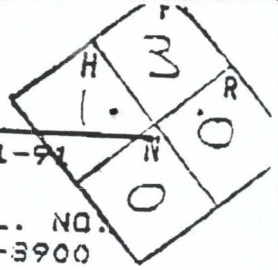
EXTINGUISHING MEDIA
Non-flammable

SPECIAL FIRE FIGHTING PROCEDURES
Non-flammable

UNUSUAL FIRE AND EXPLOSION HAZARDS
Non-flammable

LA-11-336

METAL LUBRICANTS CO. MATERIAL SAFETY DATA SHEET



SECTION I

PRODUCT NAME OR NUMBER(as it appears on label) : DATE: 7-11-91
Aquacoat KW-11
MANUFACTURERS NAME : EMERG. TEL. NO.
Metal Lubricants Co. : (708) 333-8900
ADDRESS(Number,Street,City,State and Zip Code) : MFG.'s DUNS NO.
17050 Lathrop Ave., Harvey, IL 60426-6082 :
DOT HAZ. MATERIAL DESCRIPTION, PROPER SHIP. NAME, HAZ. CLASS & ID NO.
Flammable liquid, n.o.s.(isopropyl alcohol); Flammable liquid; UN1993
ADDITIONAL HAZARD CLASSES(as applicable)
OSHA hazardous; SARA 311,312; SARA 313(isopropyl alcohol)
CHEMICAL FAMILY : FORMULA:
Mixture : Proprietary

SECTION II - INGREDIENTS
(list all ingredients)

CAS #	%W	%V	CHEMICAL NAME	LISTED AS A CARCINOGEN?	TLV*
42884-82-2		8-13	copolymer	NO	NE
75169-84-5		0.1-3	copolymer	NO	NE
25973-55-1		0.1-3	UV absorber	NO	NE
52829-07-9		0.1-3	antioxidant	NO	NE
67-63-0		5-10	isopropyl alcohol	NO	NE
7732-18-5		75-85	water	NO	NE

* (1): OSHA TWA; (2) OSHA STEL; (3) OSHA CEILING; (4) ACGIH

SECTION III - PHYSICAL DATA

BOILING POINT
> 212 F ----- C
VAPOR PRESSURE: @
68 F - C < 20 mm Hg
VAPOR DENSITY (AIR=1)
ND
SOLUBILITY IN WATER
Complete
SPECIFIC GRAVITY(H20 = 1) 1.0
PERCENT VOLATILE BY VOLUME (%) < 90
EVAPORATION RATE(=1):
ND
pH = ND
PERCENT SOLID BY WEIGHT (%) > 10
APPEARANCE AND ODOR: white, translucent liquid; mild odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 95 F
method used: TCC
FLAMMABLE LIMITS: LEL: NA UEL: NA
EXTINGUISHING MEDIA:
Foam, dry chemical and carbon dioxide fire extinguishers may be used.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self contained breathing apparatus in confined areas.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
None

SECTION IX- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Store inside, away from extreme temperatures. Empty drums may contain product residue. All safety precautions taken when handling this product should also be taken when handling empty drums. Do not allow product to freeze.

OTHER PRECAUTIONS:

None known.

The information provided herein is believed to be accurate to the best of Metal Lubricants Co.'s knowledge as of the date of its issue. Metal Lubricants Co. does not warrant or guarantee the information provided and will not be held liable for any loss or damage from its use.

Prepared by:

Christian Bigelow
Health, Safety and Environmental Coordinator

APPENDIX D

VSI TRIP REPORT

VISUAL SITE INSPECTION
TRIP NOTES
OCTOBER 20-21, 1991

Dave Croxton, EPA; Noushin Arab, PRC; and Gwen Herron-Moon, PRC arrived at BEI offices at Pier 91 at about 8:05 a.m. Present were:

Galen Tritt, Ecology
John Stiller, Burlington Environmental - Compliance
Ron Atwood, Burlington Environmental - Compliance
Nathan Mathews, Burlington Facility Manager
Mike Brandeberry, Burlington Environmental
Julie Sloquin, Burlington Compliance
Doug Hotchkiss, Port of Seattle
George Markwood, Pacific Oil
Don Newlin, Port of Seattle (attorney)
Arrived later:
Sue Roth, Kennedy-Jenks (Contractor to Port)
Marylis Palumbo, Port of Seattle (attorney)

The PRC ream reviewed the notification letter requests with those present. Started with a facility tour of Burlington Environmental Inc. at approximately 9:45 am.

Viewed the oil/water separator identified as SWMU 2. This separator has been closed since 1990. It is a below ground tank. It is currently covered and waiting for corrective action to occur subject to the RFI that is being conducted at BEI.

The hazardous waste tanks are bermed from the other tanks. The catchment basins in the HW area is sealed, water or whatever accumulate in the basins are pumped to holding tanks prior to treatment in the waste water treatment system.

The team viewed the inoperable sludge decanter in the small yard. It was covered and located across the yard from the area where the barrel washing occurred. Also in this area was a contractor storage shed containing odds and ends including a small drum of something labelled dangerous waste.

Across from the API separator was an area previously used for barrel cleaning operations. The cleaning operations stopped sometime in the 1970s. The area is paved over now. The separator is a now unused. It is unknown whether the API separator is empty now or whether there have ever been any leaks from it.

Returned past centrifuge to the boiler room where PANOCO's boiler is located. Looks like an insulated boiler with some of the insulation starting to pull away.

The boiler burns residual fuels (i.e. Bunker fuel) and generates steam which is used to heat the oil tanks. The tanks (really the oil) must be kept at a certain temperature (the temperature depends on what kind of oil it is and where it came from) to keep it a low viscosity.

Adjacent to the boiler room is a drum storage area. This room stores hazardous waste for less than 90 days and is also a product storage room this is SWMU #1 in the Tetra Tech RFA.

On-site rain water is collected in tanks and treated (probably by separation) prior to discharge.

After lunch the VSI team began the tour with inspecting additional storage areas beneath the freeway. Under the freeway was a petrol powered generator and lots of odds and ends. The team came across a small locked building which turned out to house a water main. It is next to the new substation. Much of the area beneath the freeway is used as a marine maintenance area with a tank of diesel, two trailers, and stacks of tires.

Next the team viewed PANOCO's hydrocarbon recovery system. This system has a metro discharge permit. This system removes diesel from the groundwater that was spilled from an unknown source. PANOCO has the source narrowed down and has stopped using the suspect piping. Pipe was cleaned out. When the discharge was noticed the piping system was hydro tested. The recovery system screens off the diesel which is reused. There is no storage of waste oil because the diesel is pumped directly back to the PANOCO diesel tanks for reuse. Any oil collected during transfer by drippings is sucked back into the PANOCO tanks. Groundwater monitoring is done once a year from wells on the fill area between L. Jacobs and Puget Sound.

All storm water on the berm is discharged through outfalls.

Team peered inside the locked Navy boiler room. Windows were dirty and room dark so it was hard to see inside. Although room looked messy.

Out on the pier was another electric vault near the fruit truck area it was approximately 5 feet by 5 feet and 15 feet deep with a grate over the opening.

Entire pier is asphalted.

Pier is being repaired and widened by the port. At least two piles of construction debris with lots of wood piling.

Team reversed steps to cross fill area and go from Pier 90 to 91. On the way back team viewed two storm drains discharging to the sound. In addition to the outfall pipes there were several additional pipes protruding from the rip rap but not discharging.

The team also came upon several drums (~6). Drum labels signified that non-hazardous petroleum contaminated soil was contained in the drums. Some of the drums were on pallets, others on the concrete, and 3 did not have lids.

The ammonia release referred to in the PAR occurred in the first building on Pier 91.

Next the team came across one of the fuel blending stations that blends fuel to a particular specification according a ships preference. A catch basin is beneath the piping. The pan drains to a sump which according to BEI the accumulation is pumped out and gets treated at BEI. There is a small area on one side of the area where there appears to be a sheen on the asphalt.

CITY ICE LEASED BUILDINGS

Building M-28

Leased by City Ice and Cold Storage occupied by Independent Packers who repackage fish for sale. VSI team did not enter this area of the building. Spoke to company owner Bill Manning outside of building 40.

This information was told to us by City Ice representatives. Portion of the building is occupied by the City Ice forklift recharging area. This is where the battery run forklifts are recharged. Batteries when spent are traded in for new ones. Some of the areas near the battery recharging had some kind of liquid or oily film on the floor where the forklifts parked while recharging. Outside of battery recharge area beneath the highway was found an abandoned apparently used battery and some empty drums.

Building W-39

Leased by City Ice and Cold Storage for storage of frozen product. The refrigeration system in this building is mostly a brine system with the refrigeration mechanism of ammonia. The cooled ammonia cools the brine which runs through pipes in the building to cool the rooms. Less than 300 gallons of waste oil every couple of years in generated from the cooling system. This oil results from small releases that are caught in pans or buckets and periodically emptied into a larger bucket in the area. This is then poured into a barrel container outside of the building in the maintenance area. This oil is generated through routine maintenance of the system. United Drain comes to pick up the waste for reprocessing. This building also has a small maintenance area with one parts washer unit leased from Safety-Kleen. A red oil collection tank is stored in this room. The refrigeration unit inside looked well maintained.

Buildings W-390 and B-391

Leased by City Ice. Also used for cold storage of frozen product. Part of W-390 is also City Ice and Cold Storage offices.

These refrigeration units are newer than in building W-39 and are strictly ammonia refrigerators. Apparently the way the system is set up if a release of ammonia resulted no more than 100 lbs could be released in 24 hours.

Building B-392

Leased by City Ice used by Arctic Alaska. Arctic Alaska a fish processing company that repackages frozen fish products. Storage and processing also done by Arctic in Building W-40. B-392 is strictly cold storage.

Spoke with Allen Mitchell of Arctic Alaska. Uses batteries for running forklifts. Trade in spent batteries when buying new ones. Fish waste is sent to a fish vender. City Ice services the refrigeration systems in Building B-392 and W-40.

Conveyers are electricity driven also use of hydraulic pumps.

Building W-40

Leased by City Ice used by Arctic Alaska and Independent Packers for processing and some cold storage. Additional information under B-392.

Building W-47

City Ice Leases. One of two buildings that is designated for demolition in 1993. Currently this 50,00 square feet warehouse houses a number of difference storage products from some undetermined businesses and one active business in the warehouse.

Pacific Rim Consultants conduct steel fabrication which includes welding and apparently some priming. Company owner denied doing any priming onsite but Dave Croxton of EPA observed wet steel girders that appeared to be freshly primed.

In the City Ice area of Building W-47 the main area is filled with pallets and pallets of smelly fish meal. On the south side of the warehouse on the outside of the building the VSI team viewed 16 drums, some empty some labelled paint wastes, or gas, one labelled transformer oil. The paint waste drums did not seem to be empty. Also observed several old abandoned cars and addition drums (12) secured behind chicken wiring labelled concrete curing. There were also some old propane tanks.

Area adjacent to fish meal room indoors the VSI team 2 or 3 drums containing unknown wastes some stacked on pallets. Eight drums of product motor oil on pallets. Twenty-four 1-gallon jugs of inhibited mineral acid. Three 5-gallon drums of mineral thinner. Danger combustible - said label. A transformer box. And 4 more drums in dark side of room - couldn't read label.

Outside of Building W-47 were approximately 8 portable processing tanks of some kind (north end of Building). White tanks. Didn't appear to contain anything nor was there any leakage beneath the tanks.

Outside of W-47 between W-47, and W-48 behind a wire cage were three apparently inactive transformers (TB #1).

Building W-48

Leased by Commercial Crating and various other small organizations. On the north end of W-48 is Commercial Crating a wooden box and crate construction outfit. Lots of stacks of wood, plenty of it in disarray. Looks like a nice fire hazard. Some sort of shed out front with a big barrel as small tank collecting liquid. Some containers say flammable waste. Lots of other disrepair or containing hazardous waste perhaps. The manager would not let us in to look around. For insurance purposes he said. Around the side, between buildings W-47 and W-48 across from the transformers was a drum storage area with about 24 drums on pallets. Most of them appeared to be empty. Some of the drums were labeled with diisocyanate.

The south end of the warehouse is used for storage by a number of different parties of a variety of material. Seafair stores props in here. An organization for retired people stores old furniture here. In the Seafair area there were about 30 empty drums neatly stacked. Use unknown.

Buildings W-158, W-155, and W-154

These buildings leased by Distribution Auto Services (DAS) is used primarily to process and store imported automobiles. DAS uses the short fill area, located next to Lake Jacobs to park the cars and trucks once they disembark from the ships.

DAS also leases property at the north end of Terminal 91 to wash, apply protective coatings, repair, paint, and install additional items into the vehicles. West of Building W-158 is an automobile spray system. This spray system consists of an inverted U-shaped pipe through which water is pumped. Water is sprayed from holes on the inner side of the U-pipe on to cars and trucks as they drive through. This is an initial wash station intended to remove dirt and dust. Water from the spray station flows in a stream along the asphalt to the storm drain. Building W-158 is considered the car wash station. In one half of Building W-158, DAS employees remove expired aquacoating from vehicles with detergent. Aquacoating is an environment protection coating that must be removed and reapplied every 90 days. In the second half of Building W-158 a new coat of aquacoating is applied. Sudsy washwater from the first half of the building was observed running out an open door to a storm drain.

In Building C-154 accessories such as alarms and CDs are installed. Minor maintenance of the vehicles also occurs in this building, maintenance largely consisting of oil changes. DAS generates ten 55-gallon drums of hazardous waste a year.

The VSI team conducted a brief exit interview with the remaining BEI representatives. This discussion explained how the rest of the RFA process worked. John Stiller asked if they could see a draft copy of the report. The VSI was concluded at approximately 4:30 p.m.